Instructions for Architects and Engineers

Doing Business with

Division of Engineering and Architectural Services

July 2001

Washington State Department of
General Administration

Instructions for Architects and Engineers

Doing Business with

Engineering and Architectural Services (E&AS)
DOC Team Program
DSHS Team Program

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Chapter 1 General Information

Chapter 2 Planning and Design

Chapter 3 Construction Documents

Chapter 4 Bidding, Printing, & Permits

Chapter 5 Construction Administration

Chapter 6 Project Close-out

Appendices

CHAPTER 1

General Information

1.0 Manual's Purpose

These Instructions with appendices are for Architectural or Engineering consultants (A/E) having design Agreements with the Department of General Administration (GA), Division of Engineering and Architectural Services (E&AS) for work at various state agency locations.

These Instructions and appendices are considered to be part of the Owner's project guidelines. They are not intended to modify or eliminate any of the terms or provisions of the Agreement. If conflicts occur between the Agreement and these Instructions, the Agreement shall govern.

Guidelines for design, commissioning, energy and environmental, energy life cycle cost, indoor air quality, constructability, Y2K, CADD standards, value engineering, and construction waste management will be provided as needed. The A/E, Client Agency, and E&AS PM will determine which guidelines are applicable for individual projects.

Abbreviations and definitions used in this manual are contained in Appendix I.

1.1 Authority

1.10 Department of General Administration
The Department of General Administration, Division of Engineering & Architectural Services is authorized by statute to design or to contract for the design and construction of public works projects for state owned facilities for numerous State agencies. RCW 43.19.450.

1.11 E&AS Project Manager
The E&AS Project Manager (PM) represents the legal contracting authority for the State. Department of Corrections (DOC) projects are managed by DOC Team Project Managers who represent the legal contracting authority for those projects. The DOC Team PM is synonymous with the E&AS PM as used in this document.

1.12 Design/Construction Statutes & Codes
Over 80 statutes, Revised Code of Washington (RCW), and codes, Washington Administrative Code (WAC), apply to the design and construction of State-owned facilities. See Appendix II for a list of most applicable RCW and WAC sections. The A/E is required to conform to all applicable statutes and codes.

1.2 Participants & Responsibilities

1.20 Principal Participants
E&AS PM
Client Agency
A/E

1.21 Typical Responsibilities
(A specific project may require additional or differing responsibilities.)

E&AS PM:
Provide a project scope, schedule and budget, determine which guidelines are applicable to the project and incorporate them into the scope of services.

Conduct A/E selection process.

Negotiate and prepare the A/E Agreement for execution and issue a Notice to Proceed (NTP) to the A/E.

In a timely manner, issue Notice to Proceed (NTP) for various phases of project design, bid and construction.

Review and approve invoice vouchers for payment.

Approve changes in scope of services, schedules, budget, fees, and amend the A/E Agreement.

Review and approve progress documents submitted by the A/E.

Arrange for the advertising, receipt and opening of bids.

Set up a Pre-Construction meeting with the contractor, A/E, and Client Agency.

Facilitate resolution of project issues, disputes, or claims.

Accept completed work on behalf of the state.

Client Agency:
Review and concur with the project scope, schedule and budget, provide recommendations to the E&AS PM on which guidelines are applicable for incorporation into the project scope of services.

Participate in the A/E selection process.

Provide detailed functional requirements, site constraints, existing record drawings and specifications, design standards, maintenance requirements and other pertinent information to the E&AS PM and A/E.

Have a representative authorized to make decisions at all scheduled meetings.

Agency personnel, who have appropriate project knowledge, should attend project design and construction meetings.

Review work and recommend approval to the E&AS PM.

Disburse monies following approval of the invoice voucher(s) by the E&AS PM.

Submit written requests for any changes in scope of services, schedule, budget, or fees to E&AS PM for review, approval, and incorporation into the legal documents.

A/E Consultant:

Be fully knowledgeable of the state's Agreement, Instructions for A/Es, and Guidelines. Understand and provide the services specifically included or required by the project scope and the applicable guidelines.

Prepare invoice vouchers for payment of A/E services. See Appendix III for instructions for preparation of invoice vouchers.

Have a representative authorized to make decisions at <u>all</u> scheduled meetings.

Provide updated project cost estimates and schedules at the end of the Schematic Design, Design Development, and Construction Document phases.

Participate in the bid opening process. See Chapter 4 of these instructions.

Initiate and obtain design, plan reviews and approvals from all applicable regulatory agencies.

Submit written requests for any changes in scope of services, schedules, budget, or fees to E&AS PM for approval.

Attend and participate in leading the Pre-Construction meeting with Contractor, E&AS PM, and Client Agency.

Schedule and chair design and construction meetings, establish and distribute agendas for meetings, record meeting minutes and distribute to E&AS PM, Client Agency, Contractor, and other appropriate parties.

In a timely manner, review contractor invoice vouchers and approve for payment.

Prepare and process change order proposals and field authorizations.

1.3 Communications

1.30 Communications between A/E, Client Agency, and E&AS PM

Correspondence and communication on all issues to or from the A/E shall be channeled through the E&AS PM. Exceptions may be authorized by the E&AS PM for specific projects or situations.

Authorization by the E&AS PM for the A/E to communicate directly with Client Agency personnel may be given to expedite the design and to avoid communication delays. This action does not authorize additional work, change in scope, or exclude copying all communications between A/E and Client Agency to the E&AS PM.

1.31 State Project Numbers

Determining Project Number

A project number, for example 2000-024, consists of the fiscal year (2000) and an E&AS numerical sequence number (024).

Assigning Project Numbers

E&AS shall assign a State Project Number to all projects.

Using Project Number

<u>All</u> written communications regarding the project shall carry this E&AS project number.

All drawings, specifications, reports, and project correspondence **MUST** have the state project number. The suffixes are to be used only in reference to a specific agreement or contract.

1.32 Review and Approval

Review and approval shall be conducted in accordance with the schedule of services defined in the Agreement.

Final review and approval authority for A/E's work resides with E&AS PM.

CHAPTER 2

Planning and Design

2.0 State Expectations

2.00 Project Design
State facilities are intended for long-term use. Their design must provide functional facilities requiring low maintenance; must be durable; provide flexibility for changing uses, and low in operating costs. The State requires construction documents to be complete, clear, specific, accurate, coordinated between disciplines, and explicit in suitable materials, systems, and workmanship.

Throughout the design phase of a project, the A/E shall work closely with the E&AS PM and Client Agency staff to ascertain and confirm all project requirements.

In addition to the guidelines contained in the appendices, the Client Agency may have specific design requirements. These requirements will be provided through the E&AS PM.

2.01 Project Budget
The budget is fixed and the project must be designed and bid within the Maximum Allowable Construction Cost (MACC).

2.02 Project Scheduling
The project schedule shall be based on the planning, design, and construction requirements of the project and must consider the state funding cycles, curriculum or school year determinants, weather, etc., and must allow sufficient time for owner mandated review, including value engineering, energy life cycle cost analysis, ADA review, constructability review, building commissioning, and permitting procedures.

2.1 A/E Additional Services

The A/E shall not proceed with additional service work prior to receiving written authorization from the E&AS PM.

For authorization to be provided, the A/E shall prepare a written proposal for additional services based on the Conditions of the A/E Agreement. Written authorization for additional services must be contained in the Agreement or by amendment to the Agreement.

2.2 Initial Design Meeting

E&AS PM shall schedule an initial design meeting with the A/E and Client Agency. Agenda will follow the "PRE-AGREEMENT CONFERENCE CHECKLIST" and will also include: Introduction of agency personnel, subconsultants, and other participants, reviewing project's scope of work, budget, communications, guideline requirements, Client Agency's design requirements, project schedules, and existing data.

2.3 Pre-planning and Design

2.30 Existing Program Data
The E&AS PM and Client Agency will make available to the A/E all available program data for functional requirements.

2.31 Existing Project Data
The A/E will be given or have access to all available existing project data; for example: program, as-builts, studies, surveys, EIS, hazardous material and maintenance surveys, checklist(s), space standards, construction standards or other owner requirements.

If an OFM pre-design study was undertaken by the Client Agency for the project, that data will be made available to the A/E.

2.32 Existing Conditions
The A/E shall review the as-builts, any pertinent studies, and other data with their sub-consultants to assess the relationship between the existing and proposed project conditions. Following this review, the A/E and their sub-consultants will perform a site investigation to verify existing conditions.

After investigation of existing conditions, the A/E should recommend to the E&AS PM any necessary supplemental surveys or studies. The recommendation shall be in writing and include reason(s), purpose(s), and if applicable, a proposed fee for the work.

2.33 Permitting Agency Coordination
The A/E shall know the requirements imposed by all permitting agencies having jurisdiction over the work, and shall design the project in accordance with those requirements. The A/E shall inform the Client Agency and the E&AS PM of those requirements that may affect the project scope, budget or schedule. The A/E shall make timely contact with the permitting agencies and shall coordinate any interaction required during the implementation of the project.

2.34 Utility Coordination
The A/E shall know of the energy and conservation measures funding programs offered by the utilities serving the project area. The A/E shall inform the

Client Agency and the E&AS PM of the opportunities for participation, and coordinate any interaction required to implement those programs in the project.

A/E shall contact the Customer Service Engineer of the service utilities early in the design process to determine that adequate size and type of services can be provided.

Utilities contacted may include, electric, gas, fire and police alarm interface, voice, and data, as applicable.

2.35 Mandated Review Cooperation
The A/E shall fully cooperate with the Owner initiated process/procedures for Energy Life Cycle Cost Analysis (ELCCA) , Value Engineering (VE), commissioning, constructability review, ADA review, and etc.

2.4 Schematic Design Phase

2.40 Schematic Design
The A/E shall provide Schematic Design Documents as outlined in the Conditions of the A/E Agreement.

2.41 Schematic Design Meetings
The A/E shall:

Schedule and conduct all schematic design meetings with the E&AS PM and Client Agency.

Record and distribute minutes of the meetings.

2.42 Energy Life Cycle Cost Analysis (ELCCA)
The E&AS PM will contract for the services of an ELCCA early in the schematic design phase.

The A/E shall coordinate the meeting to identify and recommend energy conservation measures that may be incorporated into the ELCCA Work Plan. (Refer to APPENDIX IX "Energy Life Cycle Cost Guidelines"and/or web page http://www.ga.wa.gov/eas/elcca).

The ELCCA analyst shall prepare and submit the Work Plan for approval to E&AS prior to completion of Schematic Design.

2.43 Schematic Design Approval
The A/E shall schedule a final Schematic Design Meeting. This meeting may serve the dual purpose of a final Schematic Design review and approval meeting.

Final Schematic Design Documents must be accompanied by a project cost estimate and project schedule.

The A/E shall obtain the E&AS PM's written approval of the Schematic Design phase.

Only the E&AS PM can provide A/E with the NTP to the Design Development Phase.

2.5 Design Development Phase

2.50 Design Development
Based upon the approved Schematic Design Documents the A/E shall prepare Design Development drawings, outline specifications, product information, project schedule, and cost estimate as required by the conditions of the A/E Agreement.

VE and ELCCA shall be included in this phase if applicable, and the approved recommendations of both are to be incorporated into the final Design Development documents.

2.51 Design Development Meetings
The A/E shall:

Schedule and conduct all design development meetings with the E&AS PM and Client Agency.

Record and distribute minutes of the meetings.

2.52 Value Engineering (VE) Review
A/E and subconsultants may be required to participate and provide support for project VE review. A/E shall review VE report and prepare written response for Owner's consideration. Final VE review comments may be incorporated into the Design Development documents as part of the Owner's review process.

2.53 Energy Life Cycle Cost Analysis (ELCCA)
A/E and subconsultants may be required to participate and provide support for the preparation of ELCCA. A/E shall review ELCCA report and prepare written response for Owner's consideration. Final ELCCA review comments may be incorporated into the Design Development documents as part of the Owner's review process.

2.54 Americans with Disabilities Act (ADA)
A/E and subconsultants may be required to participate and provide support for project ADA review. A/E shall review the ADA report and prepare written response for Owner's consideration. Final ADA review comments may be incorporated into the Design Development documents as part of the Owner's review process.

2.55 Bidder Design
The A/E shall limit the use of contractor design-build services to the traditional areas , such as roof trusses, metal buildings, fire sprinklers, and controls. To extend this type of service to other areas the A/E shall inform the E&AS PM and obtain consent.

2.56 Design Development Approval

The A/E shall schedule a final Design Development Meeting.

Final Design Development Documents must be accompanied by an updated project cost estimate and project schedule. The project cost estimate, including all approved bid alternates, must be within the MACC.

The A/E shall obtain the E&AS PM's written approval of the Design Development phase.

Only the E&AS PM can provide A/E with the NTP to the Construction Document Phase.

CHAPTER 3

Construction Documents

3.0 Construction Document Phase

Based on approved Design Development Documents the A/E shall prepare the following documents: Project Manual, construction drawings, detailed cost estimate, and project schedule as outlined in the Conditions of the A/E Agreement.

3.1 Project Manual

3.10 Project Manual Format

Cover Sheet - The cover sheet shall contain the following minimum information:

- State project number (e.g., 2000-024),
- Project Title,
- Date,
- Name of state agency for which the project is being constructed (e.g., For: [Client Agency name]),
- Contracting Agency: Department of General Administration, Division of Engineering & Architectural Services,
- Name of A/E firm, and
- Bid set number.

Title Sheet - Title sheet shall contain the following minimum information:

- State project number (e.g., 2000-024),
- Project Title,
- Date,
- Name of state agency for which the project is being constructed (e.g., For: [Client Agency name]),
- Contracting Agency: Department of General Administration, Division of Engineering & Architectural Services,
- Name, telephone number, and address of A/E firm,
- Professional stamp with signature and date,
- Names, telephone numbers, and addresses of sub-consultants, and
- Signature block for E&AS PM and Client Agency representatives to sign and date. See example in Appendix VI.

Table of Contents - A table of contents shall list the entire contents of the Project Manual.

Bid Advertisement as used for publication.

State "Boilerplate" - see Appendix IV

E&AS will provide one set of original boilerplate documents for printing. These documents are to be included in the Project Manual in the order listed:

- Instructions to Bidders
- Advertisement for Bids
- Payment and Performance Bond
- Certificate of Insurance
- Bid Proposal
- General Conditions
- Supplemental Conditions
- Public Works Prevailing Wage Rates

These documents shall not be modified or amended without the explicit approval of E&AS.

3.11 Construction Waste Management

The owner desires that this project shall generate the least amount of waste possible and that as many materials and waste as possible from this project is recycled, salvaged, or reused in order to minimize the impact of construction waste in landfills.

3.12 Public Works Prevailing Wage Rates

Each set of bid documents shall include the wage rate publication for the county in which the project site is located (counties if there are multiple sites).

E&AS will provide one set of statewide classifications and associated prevailing wage rates and a listing of potential statewide off-site fabricator or manufacturer wage rates following each L&I's biennial publication.

The A/E must work closely with E&AS representatives to ensure that the most recent publication by L&I is included in the bid documents.

3.13 Project Manual Information

With the exception of the "Bid Proposal," the Boilerplate items shall not be revised, amended, or incorporated into any other section of the bid documents.

On the Bid Proposal the A/E shall fill in the project number and title, bid alternates, time of completion, and liquidated damages requirements.

A/E shall assist the E&AS PM and Client Agency in determining liquidated damages amount, see Appendix VI, Liquidated Damage Checklist.

A/E shall prepare technical specifications using standard "CSI" format. E&AS will provide a set of Division I, General Requirements (Appendix V). These may be modified to meet the specific requirements of the project.

Sole source material specifications and pre-qualification of contractors requires E&AS approval.

The A/E shall not add general disclaimer statements to the bidding documents without prior approval from E&AS.

The A/E is required to make judgments and recommendations regarding "equal" products.

3.2 Drawings

3.20 Materials
Drawings prepared for bid shall be on 24 x 36 mylar sheets, unless otherwise approved by the E&AS PM.

The A/E is required to deliver to E&AS all original drawings. If approved by the E&AS PM, reproducibles on 4-mil mylar may be substituted.

When computer aided drafting (CAD) is used in the production of the bid documents, a set of the CAD disks of those documents shall also be provided to the Owner by the A/E with appropriate instructions for retrieval of data. (Reference Appendix XIV, CADD Standards Guidelines).

3.21 Cover Sheet
Cover sheet shall contain the following minimum information:

- State project number (e.g., 2000-024),
- Project Title,
- Date (date of issue for bid),
- Name of state agency for which the project is being constructed (e.g., For: [Client Agency name]),
- Contracting Agency: Department of General Administration, Division of Engineering & Architectural Services,
- Name, telephone number, and address of A/E firm,
- Names, telephone numbers, and addresses of sub-consultants, and
- Signature block for E&AS PM and Client Agency representatives to sign and date. See example in Appendix V.
- Signature of ADA approval when applicable.

Small projects may include additional information such as vicinity map, symbols, general notes, schedules, and etc.

3.22 Typical Sheets
All sheets shall include a title block with the following information:

- State project number,
- Project Title,
- Sheet contents,
- Sheet number,
- Professional stamp with signature, and date.

3.3 Meetings

The A/E shall:

Schedule and conduct all Construction Document phase meetings with the E&AS PM and Client Agency.

Record and distribute minutes of the meetings to all participants.

3.4 Document Review

A/E and subconsultants shall conduct a thorough review of the construction documents to ensure that all previous comments have been incorporated, that the documents are 100% complete, that the documents have been fully coordinated between disciplines, and that they are ready for E&AS review and approval.

3.40 Constructability Review
A/E and subconsultants may be required to participate and provide support for project Constructability Review. A/E shall review Constructability Review report and prepare written response for Owner's consideration. Final Constructability Review comments may be incorporated into the Construction Documents as part of the Owner's review process.

3.41 Permit/Plan Reviews and Fees
A/E shall determine the applicable permitting and plan review agencies and permitting requirements for the project, including a schedule for those reviews.

A/E shall submit the necessary documents to the local permitting agency, Department of Health, DSHS Construction Review, Fire Marshal, L&I or local electrical review, and other required design approval agencies. A/E shall respond to comments and modify the construction documents as required.

E&AS PM will arrange for payment of plan check fees.

3.5 Bid Alternates

Alternates are limited to a maximum of six (6) unless otherwise approved. Alternates may be placed in order of priority as established by E&AS and Client Agency. The base bid and all additive alternates shall be designed within the MACC. Any alternates not included in the MACC must have prior written authorization by the E&AS PM. Deductive alternates are only to be used with approval by the E&AS PM.

3.6 Document Approval

Final Construction Documents must be accompanied by a detailed project cost estimate and project schedule as required by the Conditions of the A/E Agreement. The project cost estimate, including all approved bid alternates, must be within the MACC.

The E&AS PM is the State's final approval authority for Construction Documents.

Only the E&AS PM can provide A/E with the NTP into the Bid Phase.

CHAPTER 4

Bidding, Printing & Permits

The discussion in this chapter pertains to standard public bidding of state projects. Several other options are available: Limited Public Works for projects under $25,000, and Emergency projects. The E&AS PM will determine the appropriate method.

4.0 Pre-bid Meeting

The A/E shall schedule and conduct a pre-bid review meeting with the E&AS PM and Client Agency for agreement on:

- Bidding strategy, including base bid and alternates;
- Construction schedule;
- Document printing and postage costs;
- Permit review process;
- Completion of Liquidated Damages Checklist. See Appendix VI;
- Bid date and location;
- Bid Advertisement;
- Obtain signatures on drawings & project manual; and,
- Special inspections/testing and other services required for the construction phase.
- Any prequalification of contractors or subcontractors must be approved by E&AS.

4.1 Bid Date and Location

Bid Date and Time

When the Bid Documents are ready for bidding, the E&AS PM, A/E, and Client Agency shall establish a bid date and time. The bid date for major projects should be a minimum of four (4) weeks from the date of advertisement. The bid period for other projects may vary depending on scope, location, number and types of contractors required.

Bid Location

The E&AS PM, Client Agency, and A/E shall agree upon a bid location that will encourage the most responsive bids.

For projects located in Pierce, Thurston, Mason or Lewis counties the bid openings will normally be held at E&AS unless another location is approved by the E&AS PM.

4.2 Advertisements

The A/E and E&AS PM shall develop a preliminary bid advertisement.

Any mandatory pre-bid meetings or mandatory site visits require approval by E&AS.

Arrangements for advertisements will be made by E&AS.

Project bid advertisements are posted and advertised in the E&AS web page at http://www.ga.wa.gov/eas/easvend.htm

Printing Approval:

The A/E shall submit an estimate of printing and distribution costs to the E&AS PM for approval. The E&AS PM will issue an amendment to the A/E for reimbursement of printing and distribution costs.

4.3 Bid Document Distribution

The A/E shall issue bid documents to all plan centers listed in the advertisement, issue bid documents to prospective bidders, maintain an accurate planholders list, and receive and refund bid document deposits.

The A/E shall not issue bid documents to additional plan centers without a bid deposit or approval by the E&AS PM.

The A/E shall notify E&AS PM of non-refunded bid deposits which shall be deducted from the A/E bid document printing cost reimbursement.

4.4 Site Visits, Questions, and Addenda

The A/E is to coordinate bidders' site visits with the Client Agency, answer bidders' questions, review/approve substitution requests, and issue addenda to all planholders.

All addenda require E&AS PM verbal approval.

The last addendum should be received by bidders at least five (5) working days before bid opening unless otherwise approved by E&AS.

4.5 Pre-Bid Conference

A pre-bid conference may be held for prospective bidders when deemed appropriate.

Pre-bid meetings shall NOT be made mandatory for all bidders without prior written approval from E&AS.

The minutes of any pre-bid meeting and all items discussed or observed shall be included in an addendum.

4.6 Bid Openings

4.60 Bid Opening Procedures for Olympia

Participants

The bid opening shall be conducted by E&AS and attendance by the E&AS PM, A/E, and Client Agency is encouraged.

Cost Estimate

A minimum of one working day prior to the bid opening, the A/E shall submit a copy of the "Bid Proposal" with the APPROVED estimate for the base bid and alternates. The "Bid Proposal" shall be delivered to E&AS to be read at the bid opening.

Bid Notification

Immediately following the bid opening, E&AS will call or FAX the bid results to the A/E and the Client Agency, if not in attendance.

4.61 Bid Opening Procedures for Alternate Locations

Participants

The bid opening shall be conducted by the E&AS PM. Attendance by the A/E and Client Agency is encouraged.

Cost Estimates

Prior to the bid opening, the A/E shall submit a copy of the "Bid Proposal" with the APPROVED estimate for the base bid and alternates. The "Bid Proposal" shall be delivered to the E&AS PM to be read at the bid opening.

Opening/Recording Bids

The E&AS PM will complete a standard E&AS bid summary sheet which lists those bidders who submitted their bid prior to the bid time. The E&AS PM may provide copies of this summary sheet to those attending the bid opening.

Transmitting and Transporting Bid Results

Immediately following the bid opening, the E&AS PM will call or FAX the bid results to the A/E consultant and the Client Agency, if not in attendance. The E&AS PM will hand carry all bids, bid bonds, and envelopes back to E&AS.

4.7 Bid Results

4.70 Disclosing Bid Results

E&AS shall provide the results of bidding to those inquiring and state that "all bids are taken under advisement" until the contract award is made. The A/E is to give no indication of the potentially successful bidder without E&AS's approval/confirmation. The A/E shall not initiate any contact with the bidders unless directed to do so by the E&AS PM.

Bid results may be posted in E&AS web page at http://www.ga.wa.gov/eas/contrawd.htm

4.71 Formal Acceptance of the Bid

The E&AS PM, A/E, and Client Agency will determine acceptance or rejection of base bid and alternates. The Client Agency shall confirm their recommendation in writing to E&AS.

4.72 Public Review & Protests

Bid protests or requests to review the bids are to be made in writing to E&AS.

4.8 Construction Contract and Notice to Proceed

E&AS will prepare a construction contract and issue a Notice to Proceed when all signatures, contractor's license, insurance, bonds, Subcontractor Listing, and funding have been checked and are in order.

4.9 Permits and Fees

The Contractor shall, without additional expense to the state, be responsible for obtaining all necessary licenses and permits. Costs for the general building permit and utility hook-up fees will be reimbursed by the state. All other costs are to be made a part of the total base bid.

CHAPTER 5

Construction Administration

5.0 Pre-Construction Conference

5.00 Scheduling the Conference
The A/E and E&AS PM are responsible for scheduling the pre-construction conference with Contractor and Client Agency.

The Pre-construction conference should occur after the written Notice to Proceed (NTP) from E&AS.

5.01 Participants
Those attending will include the A/E and sub-consultants, E&AS PM, Client Agency, Contractor and major sub-contractors.

Local building officials may be invited. (A charge may be assessed to the Owner for building official time, therefore confirm acceptability with Owner regarding payment.)

5.02 Meeting Chair
The E&AS PM and the A/E will generally co-chair the Pre-Construction conference.

The agenda for this meeting will be the standard E&AS Pre-Construction Conference Checklist. See Appendix VI.

The A/E will record and distribute the minutes.

5.1 Construction Progress Meetings

5.10 Scheduling the Meetings
The general schedule for construction progress meetings shall be established at the pre-construction conference.

5.11 Participants
These regular meetings should be attended by the E&AS PM, Client Agency and Facility Representatives, A/E, Contractor, major sub-contractors, and specialty sub-contractors including major suppliers and others when applicable.

5.12 Meeting Chair
The A/E will chair the meetings, record and distribute minutes in a timely manner prior to next construction meeting.

5.13 Agenda
The minimum agenda for construction progress meetings shall include:

- Project Number
- Date
- Attendees
- Previous Minutes
- Construction Progress Schedule Update
- FA/COP/CO Status
- Shop Drawing/Submittal Update
- Material Delivery Status
- Requests for Information
- As-built Updates
- Construction Waste Management Update
- Commissioning Update
- Field Observations
- Progress Payment
- Discussion/Action Items
- Next Meeting Date & Time

The minutes shall include action to be taken, by whom, and when.

5.14 Contractor Inquiries
Any questions raised by the contractor during construction meetings shall be documented by the A/E. The A/E shall expeditiously provide written answers to contractor questions or requests for information. Each question or request should be assigned a number and tracked. A request for information (RFI) form and RFI Log have been included in the Appendices. Any impact to construction cost or schedule must be noted. All changes to the construction contract must be initiated through a Field Authorization or Change Order Proposal.

5.2 Change Orders

Change Orders document the modifications to an existing contract. The change order procedure can be initiated by the Owner, Contractor, or the A/E. The A/E will generally start the process using the Change Order/Change Order Proposal form, see Appendix VI Forms.

5.20 Change Order Proposal (COP)
Change Order Proposals are issued to the contractor by the A/E. The contractor shall return the signed COP to the A/E along with the required cost information. The COP must be accepted and signed by the Contractor, A/E, Client Agency, and E&AS PM prior to its conversion into a Change Order (CO). The contractor cannot proceed with the work until the signed Change Order is issued by E&AS.

A/E shall review the Contractor's change order proposals and field authorizations for compliance with the General Conditions, and to ensure that the

costs and time requested are reasonable in comparison to industry standards.

The E&AS PM and A/E shall establish an appropriate A/E fee for design services for each change order. These A/E fees will normally be included as a percentage of the construction cost in the Agreement or a lump sum fee authorized by amendment.

The A/E shall maintain a list of all project COPs, FAs, and change orders using the standard E&AS Change Order Log. These forms have been included in the Appendices.

5.21 Field Authorization (FA)

If immediate approval to proceed with a change in the work is necessary, an FA may be used to authorize that work to maintain project schedule, protect property, or for health or safety reasons.

In an emergency, the A/E or E&AS PM can obtain oral authorization to proceed with FA work. The contractor, A/E, Client Agency and E&AS PM must all be in agreement to authorize work by FA, and that authorization must be confirmed in writing within 24 hours.

The A/E or E&AS PM must note on the FA form the name, date and time of each telephonic approval.

An FA is an authorization to commence the work for a **maximum not to exceed amount**. After the work is completed, the Contractor must produce cost data in compliance with the terms of the General Conditions. This cost data must be reviewed and approved by the A/E and E&AS PM prior to conversion of an FA into a CO.

FAs can also be used to commence change order proposal work already in the COP process. Reference the FA to the COP number.

5.3 Construction Observation

The A/E, with the E&AS PM and Client Agency, shall establish a mutually satisfactory schedule for site visits by A/E and subconsultant representatives. The A/E shall prepare and distribute written reports of all site visits.

Any construction observed by the A/E to be out of conformance with the contract documents shall be documented. The report of non-compliance shall be transmitted to the Contractor, with information copies to the E&AS PM, and Client Agency.

If the E&AS PM or Client Agency observes construction which appears to be out of conformance, the observation shall be reported to the A/E.

Only the A/E shall direct the Contractor in matters involving interpretation of the drawings or technical specifications.

Any questions or requests for information submitted by the Contractor shall be documented by the A/E. The A/E shall expeditiously provide written answers to the Contractor with copies to the E&AS PM and Client Agency.

5.4 Submittals

The A/E is required to communicate clearly to the contractor, at the pre-construction conference or shortly thereafter, all the required submittals, i.e., schedule of values, list of subcontractors, progress schedule, materials, equipment, shop drawings, operation and maintenance manuals, and any other submittals required for the project. A/E shall inform Contractor and E&AS PM if submittals are not being provided as required.

5.5 Shop Drawings

The A/E shall check the Contractor's shop drawings and material and equipment submittals for compliance with the contract documents. Substitutions approved by the A/E must also be approved by the E&AS PM and the Client Agency when appearance, performance, maintenance, or operation are affected. All substitutions that might impact either the construction time or cost require a CO. One set of approved shop drawings shall be maintained by the A/E and provided to the Client Agency at project close-out.

5.6 Utility Acceptance Inspections

The A/E shall schedule and conduct in a timely manner all utility energy conservation measure inspections. These inspections shall be conducted when the applicable conservation measures have been installed and tested in accordance with utility company policy.

5.7 Processing Contractor's Invoices

By statute the state is required to pay interest on invoices not paid within thirty days of receipt by the A/E. Therefore, if the Contractor's invoice is incorrect and a simple correction cannot be made by the A/E, the invoice shall be sent back to the Contractor along with written directions identifying the needed corrections. No invoice shall remain in the possession of the A/E longer than seven days. To expedite this process the A/E should review a draft invoice prior to submittal of the signed invoice by the contractor. The A/E shall date stamp receipt of the contractor's invoice to indicate the initiation of the 30 day period.

The A/E shall check the percent complete on all line items in the schedule of values, that the total amount due on the invoice reflects the construction progress to date, and that the amount remaining on the contract is adequate to complete the work. The A/E shall confirm that the amounts invoiced are correct, sign, date, and forward to E&AS PM.

CHAPTER 6

Project Close-out

6.0 Project Completion and Acceptance

The A/E shall schedule the final inspection with the E&AS PM and the Client Agency. Establish and issue the "punch list" to the Contractor and monitor the Contractor's performance to ensure the work on the list is completed. Comments and punch list items generated by the E&AS PM and Client Agency should be evaluated by the A/E for inclusion in the final "punch list".

The A/E is to take the lead role in monitoring the project completion and close-out process using the E&AS Construction Completion Checklist, see Appendix VI. The A/E shall diligently encourage the Contractor to complete the work in accordance with the contract documents and within the contract time for completion.

6.01 O&M Manuals
Review O&M Manuals for compliance with the contract documents. Ensure that the information provided is specific to the equipment and systems installed in the project.

6.02 Training Plan for Client Agency Personnel
Review Contractor's training plan and training material. Oversee the training to ensure compliance with the contract documents. Where possible, arrange for video taping of the training sessions.

6.1 Special Acceptance Procedures

The A/E shall provide oversight of those special procedures that may be included in the project, such as:

6.10 Energy Life Cycle Cost Analysis (ELCCA)
Complete the ELCCA verification check list as part of the punch list inspection. Submit copies of the signed checklist to the E&AS PM, Client Agency, and the ELCCA reviewer. (Refer to APPENDIX IX "Energy Life Cycle Cost Guidelines").

6.11 Testing and Balancing
Oversee Testing and Balancing process. Spot check results to ensure accuracy. Provide for re-balancing if spot checks turn up discrepancies.

6.12 Commissioning
Assist Commissioning Agent by providing information on design and obtaining needed information from the Contractor. (Refer to Appendix VII).

6.13 Indoor Air Quality
Ensure that proper procedures are being employed to air out building, equipment, and furnishings to comply with Indoor Air Quality Guidelines, Appendix X.

6.2 Substantial Completion

The A/E, E&AS PM, and Client Agency shall determine the date of substantial completion. That date establishes the completion of the contract for purposes of liquidated damages and begins the one year general warranty period. According to Part 6, paragraph 6.07, of the General Conditions of the Contract: "Substantial Completion is the stage in the progress of the work (or portion thereof designated and approved by Owner) when the construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can fully occupy the Work (or the designated portion thereof) for the use for which it was intended." Incidental corrective or "Punch List" work may still need to be completed. The following are prerequisites to establishing substantial completion:

- Completion of all contracted work except incidental punch list items,
- Certificate of Occupancy and other permits received,
- Notice from the A/E that the work is substantially complete,
- Submittal of complete O&M Manuals,
- Building Commissioning substantially complete, and
- Completion of Client Agency's operations and maintenance training.

When the above conditions have been met E&AS will issue a **Certificate of Substantial Completion**. The recommended time between Substantial Completion and Final Completion is 30 calendar days.

6.3 Final Completion & Acceptance

The A/E shall manage the final completion process to ensure that the building Owner receives a building that can be operated and maintained in the manner envisioned in the design. Final Completion means that the work is fully and finally completed in accordance with the contract documents and that all other contract requirements have been met. The following are prerequisites to establishing final completion:

- Any claim resolved, all FA and COP items completed and Change Orders processed,
- Completion of Punch List work,

- Submittal of completed and acceptable "as-built" record documents to the A/E,
- A/E and Client Agency approval of O&M Manuals, and
- Building Commissioning completed (when applicable).

When the above conditions have been met E&AS will issue a **Notice of Final Acceptance**. This notice initiates the statutory 45 day lien period. Contract retainage cannot be paid to the contractor until the statutory lien period has expired, any liens filed have been satisfied, and letters of release have been received from the Departments of L&I, Revenue, and Employment Security.

6.4 Liens

Liens filed by subcontractors or material suppliers are received, processed, and tracked by the Contracts Section of E&AS. Any liens delivered to the A/E should be promptly forwarded to E&AS. The A/E is not normally involved in the process of resolving liens.

6.5 Warranty Review

The warranty period generally begins on the date of substantial completion and extends for a minimum period of one full year. Warranty periods for individual items may be longer.

Should warranty problems arise the Client Agency may work directly with the Contractor or may relay the problems to the A/E through the E&AS PM. The A/E shall then notify the Contractor in writing.

The A/E shall schedule a walk-through prior to expiration of the warranty period. The walk-through should be attended by Client Agency, Facility Representative, A/E, E&AS PM and the Contractor. All deficiencies and highlights should be noted in the minutes by the A/E. The A/E shall work with the contractor to have all deficiencies corrected.

APPENDIX I

ABBREVIATIONS/DEFINITIONS

The following abbreviations and definitions will be used throughout these instructions:

ADA	Americans with Disabilities Act
A/E	Architect/Engineer Consultant
Agreement	Contract for professional services between the A/E and the State of Washington, Department of General Administration, Division of Engineering & Architectural Services.
Amendment	Modification to the Agreement
CA	Commissioning Agent
Client Agency	State Agency for whom E&AS is providing services
CO	Change Order
COP	Change Order Proposals
CSI	Construction Specification Institute
CPM	Critical Path Method
DOC	Department of Corrections
DSHS	Department of Social and Health Services
E&AS	Division of Engineering & Architectural Services
EIS	Environmental Impact Statement
ELCCA	Energy Life Cycle Cost Analysis
FA	Field Authorization
GA	Department of General Administration
L&I	Department of Labor and Industries
MACC	Maximum Allowable Construction Cost
MWBE	Minority or Women Owned Business Enterprise
NTP	Notice To Proceed
O&M	Operations and Maintenance
Owner	State of Washington
PM	E&AS Project Manager, authorized representative for E&AS
Pre-Design	A process of project investigation and definition required by OFM for major projects prior to disbursement of design and construction funds.
RCW	Revised Code of Washington (statutes)
VE	Value Engineering
WAC	Washington Administrative Code (codes)

APPENDIX II

RCWs & WACs Applicable to Public Works Projects by Subject

SUBJECT	RCW	WAC
ADA Accessibility	70.92	51-40
Adjustment to bid price	39.04.015	
A/E contract services	39.80	
Architects	18.08	
Art for public buildings	43.17.200	30-40
Asbestos workers certification		296-65
Bidding, competitive	9.18.120	
Boilers & unfired pressure vessels	70.79	296-104
Building Code Act	19.27	
Clean Air Act	70.94	
Construction projects in state waters	75.20	
Contractor's Bond	39.08	
Contractor's registration	18.27/39.06.010	296-200
Curbs, gutters, driveways & sidewalks	35.68	
Discrimination law	49.60	
Doors of public buildings to swing outward	70.54.070	
Earthquake Resistance Standards	70.86	
Electrical construction	19.29	
Electrical Installation law	19.28	
Elevator & lifting device laws	70.87	
Emergency public works	39.28	
Energy conservation in design of Public Facilities	39.35	
Energy Conservation/Landscape Objectives	43.19.682	
Energy related building standards	19.27A	51-11
Engineering & Architecture, Division	43.19.450	
Engineers and Land Surveyors	18.43	
Environmental coordination procedures act	90.62	
Factory built housing & commercial housing		296-150A
Flood control zones	86.16	
Handicapped provisions	70.92	51-30
Hazardous waste management	70.105	
Health and Safety - Asbestos	49.26	
Historic Building Code	19.27.120	51-19
Hours of labor	49.28.010-.060	
Interest on unpaid public contracts	39.76	
Interlocal Cooperation Act	39.34	
Landscape Architects	18.96	
Liens for labor, material, & taxes	60.28	
Life Cycle Cost Analysis of Public Facilities	39.35B	
OMWBE (Office of Minority & Women's Business Enterprises)	39.19.050	326-02
Personal service contracts	39.29	
Plans & estimates	39.04.040-.050	
Prevailing wages on public works	39.12	296-127
Public Works	39.04	
Public works - contractors licensing	39.06	
Recycled content products	39.04.133	
Recycling or reuse of materials	39.04.135	
Safety glazing requirements	70.89	
Safety standards - electrical		296-46
SEPA (State Environmental Policy Act)	43.21C	197-11
Shoreline Management Act of 1971	90.58	113-14 thru 22
Small works roster	39.04.150	236-28
Subcontractor Identification	39.30.060	

SUBJECT	RCW	WAC
Swimming pools	70.90	
Traffic control at work sites	47.36.200-.230	
Underground utilities	19.122	
Underground storage tanks	90.76	173-360
Uniform Fire Code	19.27	51-34
Uniform Mechanical Code	19.27	51-32
Uniform Plumbing Code	19.27	51-26
Ventilation & Indoor Air Quality	19.27.190	51-13
Veterans' preference	73.16.010	
Washington Industrial Safety & Health Act	49.17	296-155
Water pollution control	90.48	
Worker's compensation	51.12	
Workers right-to-know	49.70	

Instructions for Submittal of A/E Consultant Invoice for Payment

Proper preparation of invoice vouchers is necessary to ensure prompt payment by the State of Washington. Failure to properly fill out the forms and provide tax identification numbers may result in delay of your payment. Any questions you have regarding invoicing should be directed to your Engineering and Architectural Services (E&AS) project manager. Your E&AS project manager can be reached by calling him or her directly or by calling the office at (360) 902-7272.

Enclosed is a workbook with copies of the following forms, and a disk with the same forms in a Microsoft Excel 97 workbook. The workbook is titled AE-INVOICE 4-1-03.

Page	*Explanation*
Invoice	AE Invoice Voucher, State form A19-2AE1
Application	Application for Payment
Subconsultant List	Subcontractor/Supplier List and Statement of MWBE Participation

Preparing an invoice for payment utilizing Microsoft Excel:

1. Open the EXCEL Workbook "AE-INVOICE 4-1-03", and 'save as' wherever you chose, using whatever name you choose.

2. The screen showing the workbook contents should come up with the files or pages listed above. You must fill in the blue cells. If no information is needed for a particular cell, move the cursor to that cell and delete the cell contents.

3. **Invoice**
   On the Invoice Voucher page, fill in the Agency Name, the E&AS project manager name, your firm name and address, contract number, invoice date, invoice number, federal tax identification number, and the title of the person signing the form. The remainder of the invoice page will be automatically filled in as the Application for Payment page is completed.

4. **Application**
   Open the Application for Payment, and fill in the payment period dates, project name and location. The project number, firm name and invoice number should fill in automatically. Next fill in the fee percentage and MACC as indicated on your agreement. The fee amount will calculate. Fill in the % (for % complete) and the total earned will calculate. Insert the amount previously invoiced and the amount due this invoice will calculate.

5. **Sub List**
   The Subconsultant List and Statement of MWBE Participation is to be submitted with the **third** and **final** invoices. When you open the Sub List all the information at the top of the page should have filled in automatically from the previous pages.
   - **In the box provided, please indicate if your firm is M or WBE.**
   - For each subcontractor or supplier provide the name, address, telephone number and federal tax identification number.

- In the column indicated M or WBE identify each firm you believe to be a minority or women owned firm by using M or MBE, or W or WBE. The firms are not required to be certified.
- In the Start of Contract Proposed Cost column include the dollar amount of that subcontract.
- For the Final Invoice complete the remaining M or WBE and Actual Cost columns.

The sheet only shows spaces for 9 subs but can be expanded to as many as desired by using the EXCEL "unhide" feature, as follows:

- Scroll down the page while looking at the line numbering along the left side. Using the mouse, highlight number 35, hold down the Shift key and highlight number 312.
- Using the mouse click the right mouse button, scroll up to and click on "unhide".
- The sheet will open up to provide space for about 90 subcontractors.
- When the subcontractors have all been added to the list highlight the unused rows and again using the right mouse button click on "hide".
- The sheet will print as many pages as needed to include all the subs entered and still total correctly at the bottom.

Where to send your completed voucher packet:

Please check all the numbers and review the completeness of your invoice package for submittal, and sign the Invoice. The package must include: Invoice form and Application for Payment.

If this is your final invoice be sure to include your Subconsultant List and Statement of MWBE Participation. Please submit your invoice voucher package in quadruplicate. We recommend that you prepare one set of the necessary forms, make 3 photocopy sets and then sign all four sets. <u>All four sets must have original signatures</u>. Submit the four copies of the completed, assembled, and signed invoice package to the E&AS project manager for review and approval.

Download Form

FORM
A 19-2AE1
(Rev. 6/94)

STATE OF WASHINGTON

INVOICE VOUCHER

AGREEMENT NO.	INVOICE DATE	INVOICE NO.

AGENCY NAME

c/o Division of Engineering & Architectural Services

206 General Administration Building; PO Box 41012

Olympia, WA 98504-1012

ATTN:

VENDOR OR CLAIMANT

Vendor's Certificate: I hereby certify under penalty of perjury that the items and totals listed herein are proper charges for materials, merchandise or services furnished to the State of Washington, and that all goods furnished and/or services rendered have been provided without discrimination because of age, sex, marital status, race, creed, color, national origin, handicap, religion, or Vietnam era or disabled veterans status.

FEDERAL TAX ID NO.:_____
FAILURE TO PRIVDE THIS NUMBER WILL RESULT IN DELAY OF PAYMENT

BY _____
(SIGN IN INK)

(TITLE) (DATE)

DATE	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT	FOR AGENCY USE
	Total Earned to Date				
	Less Previously Invoiced				
	AMOUNT DUE THIS INVOICE				

This Certifies that Services
Invoiced herewith have been received
DIVISION OF ENGINEERING & ARCHITECTURAL SERVICES
Department of General Administration

By:_____ Date:_____

PREPARED BY	TELEPHONE NUMBER	DATE	AGENCY APPROVAL	DATE

DOC. DATE	PMT DUE DATE	CURRENT DOC. NO.	REF DOC.	VENDOR NUMBER		VENDOR MESSAGE	UBI NUMBER

REF DOC SUF	TRANS CODE	MOD	FUND	MASTER INDEX APPN INDEX	MASTER INDEX PROGRAM INDEX	SUB OBJ	SUB SUB OBJECT	ORG INDEX	WORKCLASS ALLOC	COUNTY BUDGET UNIT	CITY/TOWN MOS	PROJECT	SUB PROJ	PROJ PHAS	AMOUNT	INVOICE NUMBER

ACCOUNTING APPROVAL FOR PAYMENT	DATE	WARRANT TOTAL	WARRANT NUMBER

Download Form

STATE OF WASHINGTON
DEPARTMENT OF GENERAL ADMINISTRATION
DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES
206 General Administration Building, P.O. Box 41012
Olympia, Washington 98504-1012

APPLICATION FOR PAYMENT

AGREEMENT NO.	CONSULTANT FIRM	PROJECT NAME	INVOICE

BASIC DESIGN SERVICES

phase		*fee %*	*MACC*	*fee amount*	*%*	*total earned*	*previously inv.*	*this invoice*
SD	14%							
DD	21%							
CD	38%							
BID	2%							
Const	24%							
Compl	1%							
subtotal								

CO	*% ALLOWED*	*fee %*	*CO amount*	*fee amount*	*%*	*total earned*	*previously inv.*	*this invoice*
1								
2								
3								
4								
5								
6								
7								
8								
9								
subtotal								

BASIC SERVICE TOTAL					

ADDITIONAL SERVICES

item	*description*	*addendum fee*	*%*	*total earned*	*previously inv.*	*this invoice*
1						
2						
3						
4						
5						
6						
7						
8						
9						
ADDITIONAL SERVICES TOTAL						

INVOICE TOTAL (Basic + Add. Services)					

Download Form

STATE OF WASHINGTON
DEPARTMENT OF GENERAL ADMINISTRATION
DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES
206 General Administration Building, P.O. Box 41012
Olympia, Washington 98504-1012

APPLICATION FOR PAYMENT

PROJECT NO.	CONSULTANT FIRM	PROJECT NAME	INVOICE
			1
			DATE
			1/1/2000

A/E AGREEMENT SUMMARY

BASIC SERVICES **LUMP SUM or TIME AND MATERIALS**

DESCRIPTION of WORK	*fee amount*	*%*	*total earned*	*previously inv.*	*this invoice*
BASIC SERVICES TOTAL					

ADDITIONAL SERVICES

item	*authorization*	*item description*	*item fee*	*%*	*total earned*	*previously inv.*	*this inv.*
ADDITIONAL SERVICE TOTALS							

	authorized	*total earned*	*previously inv.*	*this inv.*
INVOICE TOTAL (Basic + Additional Services)				

Statement of MWBE Participation

Contract for:

Location:

Contractor:

Download Form

Date:

Contract No.:

Federal Tax ID No.:

Sub-Consultants Name & Federal Tax ID No.		Address and Telephone Number	M/WBE MBE	M/WBE WBE	Actual Participation MWBE Firms Only
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
Name					
No.					
		Total Minority Owned Business Enterprise GOALS	**X**		**$0.00**
		Total Women Owned Business Enterprise GOALS		**X**	**$0.00**

* Please include all subconsultant participants who are Washington State OMWBE certified

Printed Name

Title

Signature

Date

APPENDIX IV

State Boilerplate

(These documents will be forwarded under separate cover.)

The following must be included in each set of bidding documents.

1.0 Instructions to Bidders

2.0 Advertisement for Bids

3.0 Payment and Performance Bond

4.0 Certificate of Insurance

5.0 Bid Proposal

6.0 General Conditions

7.0 Supplemental Conditions

8.0 Public Works Prevailing Wage Rates

Division 1
General Requirements

(*These documents will be forwarded under separate cover*.)

01035 Modification Procedures

01200 Project Meetings

01300 Submittals

01310 Construction Schedule

01500 Construction Facilities

01505 Construction Waste Management

01600 Products & Substitutions

01700 Close-out

01810 Commissioning Specifications

The Architect/Engineer consultant is requested to review these sections of Division 1 for possible inclusion in the project manual. The intent is that they be modified or deleted as appropriate for each project at the discretion of the consultant and E&AS project manager.

APPENDIX VI

Forms

The following forms have been included in these Instructions for use in the management of state projects and are all available on disk using Microsoft Word or Excel. If the FA and CO forms are used it is important to use the appropriate color paper, goldenrod for the FA and green for the CO, and to print both sides.

Other than the CO and FA forms the A/E may use their own forms if the same information is provided.

1.0 Mandatory Forms

- Change Order Proposal/Change Order (COP/CO) - This form is required for the processing of all COPs into Change Orders.
- Field Authorization (FA) - A required form to expedite emergency work, maintain schedule, protect property, health or safety.
- COP/FA Log - The A/E may use a spreadsheet showing the same information.

2.0 E&A Services Forms

- Bid Proposal Summary Sheet
- Certificate of Substantial Completion
- Change Order Log
- Change Order Proposal/Change Order (COP/CO)
- Construction Completion Checklist
- Field Authorization (FA)
- Liquidated Damages Checklist
- Non-compliance Form
- Pre-Agreement Conference Checklist
- Preconstruction Conference Checklist
- Request for Information (RFI)
- Signature Block

Bid Proposal - Summary Sheet

State of Washington

Dept. of General Administration
Division of Engineering & Architectural Services
206 G.A. Bldg./PO Box 41012
Olympia, WA 98504-1012
(360) 902-7272 Fax: (360) 753-2848
E-Mail easmail@ga.wa.gov

Project Name	Project #	Date **BID OPENING** Time	Time verified by

Agency	Location	Contracts Specialist	Phone
			(360) 902-72

Project Manager	Phone	A/E Firm	Phone	Fax
	(360) 902-72			

	NAME OF FIRM	BASE BID	Bid Alternates 1	2	3	4	5	6	ADD Rcvd	Bond Check	Sub List
1											
2											
3											
4											
5											
6											
7											
8											
9											
	PROJECT ESTIMATE										

H:/eas/word/wordhold/bidsum99.doc

Download Form

PROPOSAL RECORDER'S SIGNATURE

PPROPOSAL READER'S SIGNATURE

STATE OF WASHINGTON
DEPT. OF GENERAL ADMINISTRATION

DIVISION OF ENGINEERING & ARCHITECTURAL SERVICES

Download Form

AGENCY _____ CONTRACT NO. _____

CO _____

COP No. _____

PROJECT TITLE _____

CONTRACT **CHANGE ORDER**

PROPOSAL REQUEST

TO: _____ CONTRACTOR PROPOSAL REQUEST DATE _____

You are directed to prepare a cost proposal for the work described below and/or detailed on the attachments referre

REASON FOR CHANGE _____

DATE PROPOSAL REQUIRED _____ CHANGE ORIGINATED BY _____

PROPOSAL REQUESTED BY _____

CONTRACTOR PROPOSAL

WE PROPOSE TO PERFORM ALL CHANGES DESCRIBED IN THE PROPOSAL REQUEST FOR:

TO: _____ (A/E) TO: _____ PM (E&AS)

CONTRACT PRICE CHANGE: ☐ NO CHANGE ☐ INCREASE ☐ DECREASE

OF _____ _____

(Washington State Sales Tax Not Included)

In accordance with the General Conditions, Cost Estimate Detail Sheet(s) are attached hereto

CONTRACT COMPLETION DATE: ☐ NO CHANGE ☐ INCREASE ☐ DECREASE OF _____ CALENDAR DAYS

The foregoing amount covers everything required in connection with the change. All other provisions of the contract remain in full force and effect. We understand that work shall not begin prior to authorization.

_____ CONTRACTOR BY _____ DATE _____

RECOMMENDATION

TO: STATE OF WASHINGTON

We have carefully examined this proposal and find the cost to be reasonable. Therefore, we recommend acceptance.

_____ _____

A/E DATE E&AS COST VERIFICATION DATE

_____ _____

AGENCY DATE E&AS PROJECT MANAGER DATE

AUTHORIZATION

CONTRACT SUMMARY (BY E&AS)

ORIGINAL CONTRACT SUM _____ PREVIOUS TOTAL _____

PREVIOUS ADDITIONS _____ CHANGE AMOUNT _____

PREVIOUS DEDUCTIONS _____ **NEW TOTAL** _____

NEW CONTRACT COMPLETION DATE _____ DAYS PERCENT CHANGE FROM ORIGINAL CONTRACT AMOUNT _____

☐ The final amount of this change order differs from the cost proposal. Invoices incorporating this change order constitutes acceptance by the contractor as total reimbursement due in connection with this change order.

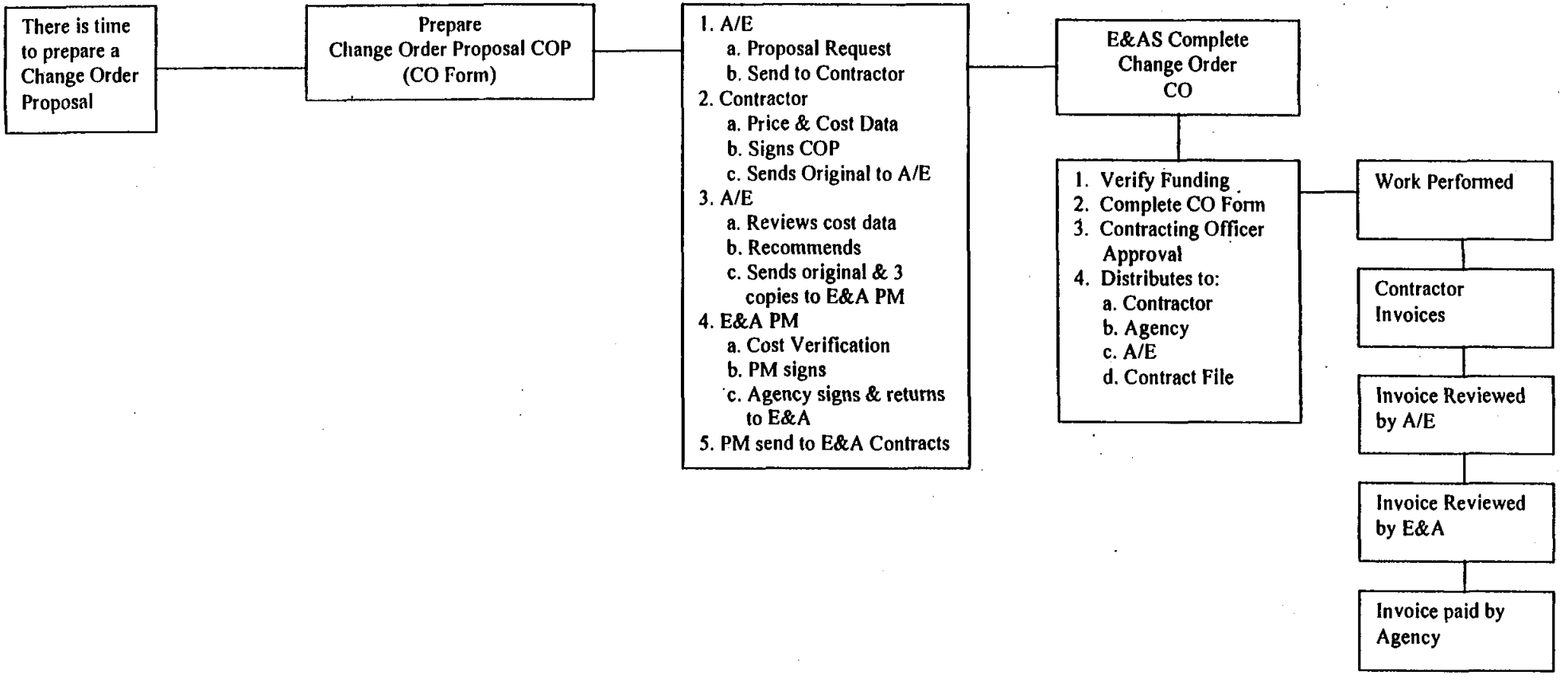
The State of Washington hereby accepts the foregoing proposal and authorizes the performance of the changes specified. This constitutes a change order to the contract only when authorizing signature is affixe

_____

AUTHORIZING SIGNATURE DATE

FORM GEN-EA-099 (Revised 12/97)

CHANGE ORDER PROPOSAL-CHANGE ORDER PREPARATION



COP PREPARATION NOTES:
The form can be either typed or neatly hand lettered in ink.
Work description of proposal request should be descriptive. "See attached" is not acceptable, the attachment needs to be described.
Reason for Change: Concisely state why the change is necessary. Phrases like "to keep the job moving" or "because the owner requested it", are not acceptable.
Change Originated by: Do not enter "by agency" or "by owner", rather give the name of the individual and the agency or company.
Proposal Requested by: Enter the name of the person who initiated the request.
Completion Date Impact: It is extremely important that the schedule impact be addressed on the change order proposal.

Incremental Change Orders: When the work authorized by a FA extends over a long period of time, incremental change orders should be prepared in order to pay the contractor in a timely manner.

Mixing FA's & COP's: Do not mix FA's and COP's into one change order, the form does not have provisions to accomplish this.
COP versus FA: It is to the best interest of both the state and the contractor to utilize the COP/CO format whenever possible. It allows the contractor to be paid in a more timely fashion.

Download Form

STATE OF WASHINGTON
DEPT. OF GENERAL ADMINISTRATION
DIVISION OF ENGINEERING & ARCHITECTURAL SERVICES

Contract No. _____

FA _____

AGENCY _____

PROJECT TITLE _____

CONSTRUCTION **FIELD AUTHORIZATION**

WORK DESCRIPTION AND MAXIMUM COST

TO: _____ DATE _____

When authorized by E&AS, you are directed to proceed with work as described below and/or detailed on the attachments referred hereto:

REASON FOR CHANGE _____

CHANGE ORIGINATED BY _____
(name) (company)

It is our opinion that this work will result in a change to the contract. You are authorized as follows:

☐ **INCREASE** **TO THE CONTRACT AMOUNT WITHIN THE MAXIMUM COST OF:**

☐ **NO CHANGE**

☐ **DECREASE** $ _____

CONTRACT COMPLETION DATE: ☐ INCREASE ☐ NO CHANGE ☐ DECREASE OF _____ CALENDAR DAYS

Payment for work authorized by this FA will not be made prior to incorporation of this FA into a Change Order.

DATE COST DATA REQUIRED BY _____ (DATE).

COST COLLECTION

Cost data required by one of the following methods in accordance with the General and Supplemental Conditions.

☐ UNIT PRICE _____
(Method of Measurement)

☐ DETAILED COST BREAKDOWN

☐ ACTUAL COST: T&M with daily work sheets that list the name, trade, firm, hours, itemized materials, equipment and other job related costs. Contractor must obtain verification of hours from _____ within _____ days from the day work was performed. (Owner's Rep.)

The above amount covers the maximum amount required in connection with the change.

ACCEPTED BY CONTRACTOR DATE

DIRECTION TO PROCEE

We have carefully examined this proposal and find the maximum cost to be reasonable.

APPROVED BY _____ A/E DATE _____

FUNDING VERIFICATION BY _____ AGENCY DATE _____

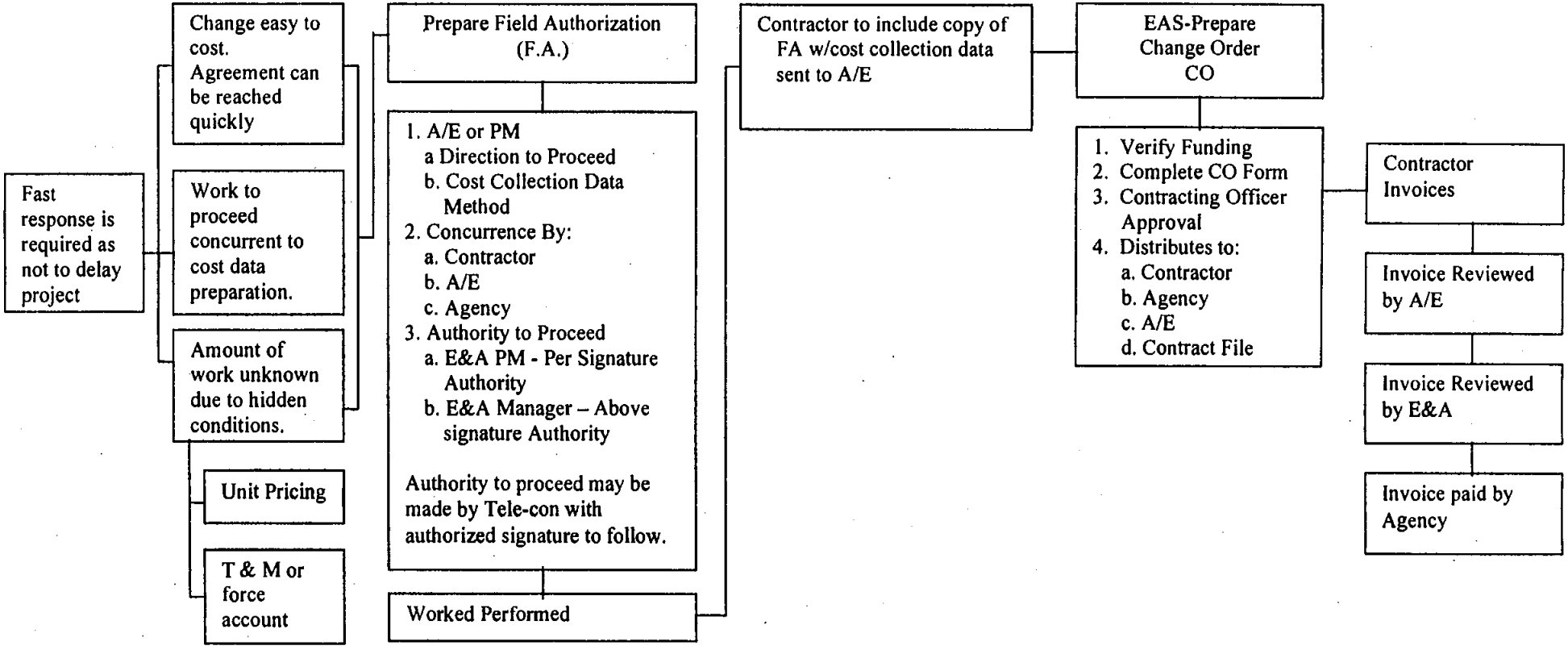
AUTHORIZED BY E&AS DATE

The final cost breakdown has been examined and is reasonable.

COST VERIFICATION E&AS DATE

FORM GEN-EA-001 (Revised 12/97)

FIELD AUTHORIZATION-CHANGE ORDER PREPARATION



FA PREPARATION NOTES:

The form can be either typed or neatly hand lettered in ink.

Work description of field authorization should be descriptive. "See attached" is not acceptable, the attachment needs to be described.

Reason for Change: Concisely state why the change is necessary. Phrases like "to keep the job moving" or "because the owner requested it", are not acceptable.

Change Originated by: Do not enter "by agency" or "by owner", rather give the name of the individual and the agency or company.

Completion Date Impact: It is extremely important that the schedule impact be addressed.

Incremental Change Orders: when the work authorized by FA extends over a long period of time, incremental change orders should be prepared in order to pay the contractor in a timely manner.

Grouping of FA's: Grouping of field authorizations should be avoided. FA's should be converted to a CO as soon as possible.

Mixing FA's & COP's: Do not mix FA's and COP's into one change order, the CO form does not have provisions to accomplish this.

COP versus FA: It is to the best interest of both the state and the contractor to utilize the COP/CO format whenever possible. It allows the contractor to be paid in a more timely fashion. The FA should only be used when necessary to avoid delaying the project.

Download Form

C H A N G E   O R D E R   L O G

E&A PM:		Contract Amount:	**$0.00**	Project Title:		Date: **8/9/2004**
A/E:		Contingency:	**$0.00**	Location:		Project No.: **00-000 G (1-1)**
Contractor:		Cont. w/o Tax:	**$0.00**	NTP:	Time:	Tax: **8.00%**

COP	*FA*	*CO*	*DESCRIPTION*	*TIME*	*rsn*	*fee*	*est.cost*	*%*	*CO COST*	*orig*	*Contr*	*A/E*	*Agency*	*Cost Eng*	*PM*	*Auth*

1/0/1900 *Completion* *days extension:* 0 | *est.total:* $0.00 | **$0.00 CO Total** *remaining contingency* **$0.00**

A Agency scope change **E design Error** **L Latent condition** **O design Omission** **R code Requirement** **V Value engineering**

Download Form

STATE OF WASHINGTON
DEPARTMENT OF GENERAL ADMINISTRATION
DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES

CONSTRUCTION COMPLETION CHECKLIST

Project Title: **Project Number:**

Agency: **Facility:**

✓	ACTION:	VERIFIED BY	VERIFIED DATE	ACTION
	1. Contractor "Notice of Completion" to A/E.			
	2. A/E inspection and "Incomplete Work List".			
	3. Contractor completion of "Incomplete Work List" and request of final inspection.			
	4. If Prior Occupancy is taken, per General Conditions Part 6.08, the date is: Prior Occupancy date: _____			
	5. Contractor requests final "Punch List" inspection.			
	6. Final Inspection: A/E, E&AS PM, and Owner "Punch List". (Items found after final inspection will be placed on the warranty item list unless an item significantly impairs operation of the facility.)			
	7. Contractor establishes punch list completion schedule.			
	8. *All work done per contract.* _____			
	Contractor signature *date*			
	9 Contractor completes punch list.			
	10 A/E confirms completion of punch list.			
	11 A/E confirms receipt of certificates, permits, and training: a. Occupancy Permit ☐ e. Staff Training ☐ b. Fire Marshal ☐ f. Elevator Permit ☐ c. Electrical Inspection ☐ g. Boiler Permit ☐ d. O&M Manuals ☐ h. _____ ☐			
	12 Substantial Completion, per General Conditions Part 6.07, the date is: Substantial Completion date: _____			
	13. Notice of Substantial Completion issued, and Warranty Period begins.			
	14. A/E confirms receipt of: e. Spare Parts and Materials ☐ a. Record "As-Built" Drawings ☐ f. Keys and Key Schedule ☐ b. Shop Drawings ☐ g. Warranty responsibility Contacts ☐ c. Test Reports ☐ h. Statement of MWBE ☐ d. Certificate of Warranty ☐ i. _____ ☐			
	15. Resolution of all FA, COP, and Change Orders, approved and processed.			
	16. *All work acceptable per contract.* _____			
	A/E signature *date*			
	17. *Accept recommendation; proceed with final acceptance.* _____			
	Client signature *date*			
	18. PM establishes date of Final Completion and submits "Completion Notice" form. Final Completion date: _____			
	19. DAD establishes date of Final Acceptance and submits to contracts specialist. Final Acceptance date: _____			
	20. E&AS notification of Final Acceptance to A/E, Client Agency, and Contractor.			
	21. Final Acceptance is advertised by E&AS, and 45 day Lien period begins.			
	22 Contract Status (PM Identify Action) a. Close Contracts ☐ c. Close Project ☐ b. Close Agreement (A/E) ☐ d. Other Action _____			

Download Form

CONSTRUCTION COMPLETION CHECKLIST

These items, 22 through 27, occur after Final Completion.

	22. **CONTRACTOR:** Upon receipt of notice of Final Completion: * Submit Affidavits of Wages Paid to Labor and Industries (L&I). * Receive Affidavits of Wages Paid from L&I with Industrial Statistician approval. * Submit Invoice for payment of retainage with approved Affidavits of Wages Paid and Statement of MWBE
	23. **A/E:** * Approve contractor invoice and forward invoice and Affidavits of Wages Paid to E&AS project manager. * Complete ELCCA verification checklist and submit to E&AS lead ELCCA reviewer. * Complete Project Evaluation form and send to E&AS.
	24. **PM:** * Approve contractor invoice and forward invoice and Affidavits of Wages Paid to Client Agency * Complete Project Evaluation form and submit to supervisor.
	25. **Client Agency:** * Receive invoice, Affidavits of Wages Paid, and Affidavit of Amounts Paid MWBE. * Submit Department of Revenue form "Notice of Completion of Public Works Contract" to Revenue, L&I and Employment Security. * Receive release of liability letter from L&I. * Receive "Certificate of Payment of State Excise Taxes by Public Works Contractor" from Revenue. * Receive "Certificate of Payment of Contributions, Penalties and Interests on Public Works Contract" from Employment Security. * Verify with E&AS no current claims against the contract, or receive letter from E&AS stipulating amount of retainage to be released. * Release retainage or send letter to release escrow. * Completes Project Evaluation form and send to E&AS.
	26. **CONTRACTOR:** * Satisfy warranty items as required.
	27. **E&AS:** * Close project files.

NOTE: If contractor has not completed the punch list and items 10 and 13 above, the following steps should be considered.

1. Withhold progress payment for work not completed, per Part 6.05 of the General Conditions.
2. Negotiate revised punch list and completion schedule.
3. Send letter to bonding company requesting completion of the project.
4. Enforce Part 5.17 of the General Conditions, which provides for the owner's right to complete the work.

Download Form

APPENDIX VI

Liquidated Damage Checklist

Date: _____

Project No. _____

Project Title: _____

_____

_____

E&AS PM: _____

A/E PM: _____

The following is the basis for calculating a reasonable approximation of the daily cost damages to the Owner, should the completion of this construction project exceed the Contract Completion date. The Contract Completion date is the date written into the contract and/or as adjusted by Change Order.

The damages may change depending upon the variables associated with time. Therefore, some contracts may require more than one liquidated damage amount to calculate a fair estimated cost. In Section I, indicate each condition of probable damage due to time. In Section II, calculate the unit cost for each item listed in Section I, add additional Section II sheets as necessary.

SECTION I - Probable Conditions at Time of Damage

____ A) The Owner will not have occupancy and usage of the project as specified.

____ B) The Owner will have occupancy and usage of the project as intended, but the project is not complete.

____ C) Total project completion regardless of occupancy or usage.

____ D) Interim milestones:

1) _____

2) _____

3) _____

____ E) Describe time related damages associated with impacts related to circumstances beyond the control of the Contractor, such as weather, utilities or delays due to permitting agencies.

SECTION II - Damage calculation for Section I

These estimated damages are based on the time frame from (_____/_____/_____) to (_____/_____/_____). All information supporting these estimates should be attached.

		Estimated Cost	*Unit Cost*
1)	Temporary Facilities		
2)	Leasing Costs		
3)	Rental Costs		
4)	Utilities		
5)	A/E Consultant Fees		
6)	Site Representative Fees		
7)	E&AS Project Management		
8)	Agency Project Management		
9)	Additional staff or temporary employees, i.e. guards, nurses, etc.		
10)	Additional Facility costs		
11)	Other costs:		
LIQUIDATED DAMAGE TOTAL:			

STATE OF WASHINGTON
AGENCY/INSTITUTION

NON-COMPLIANCE NOTICE

No: _____

To _____

_____

_____

_____

Date	
Time	A.M./P.M.
Construction Administrator	

Project Title _____ Contract No. _____

You are hereby notified that ☐ tests ☐ observation indicates that the _____

_____

does not conform to the specification requirements. The specification referenced is Section _____ Article/Paragraph _____ Under the provisions of the contract specifications, the requirements are _____

_____

_____

Noncomplying work may be required to be removed and replaced at no cost to the Owner.

It shall be the contractor responsibility to determine the corrective action necessary. The Contractor shall submit a response to this Non-Compliance Notice by _____, stating the intended course of actions, and a defined schedule for implementation of corrective measures.

Failure to respond to this notice may result in rejection of work notification.

_____
Construction Administrator

Noncompliance notice was received by Contractor on _____
Date

DISTRIBUTION:
1. Contractor
2. Project Manager (BPW)
3. Construction Administrator

By _____

Title _____

GEN-EA 005 (Rev. 08/87) Construction Administrator QX A-227

Download Form

APPENDIX VI
PRECONSTRUCTION CONFERENCE CHECKLIST

DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES

Project No._____ Date_____

Title _____

* _____
Name of Client Agency *Address* *Cit y / State / Zip Code*

* _____
Name of Using Agency *Address* *City / State / Zip Code*

* _____
Name of Contracting Agency *Address* *City / State / Zip Code*

* _____
Name of Consultant *Address* *City / State / Zip Code*

* _____
Name of Contractor *Address* *City / State / Zip Code*

* _____
Location of Conference

1. Identification of Office Representatives:

	Person	*Phone*	*Fax*	*Email*
Client Agency	_____	_____	_____	_____
Using Agency	_____	_____	_____	_____
E&AS PM	_____	_____	_____	_____
Consultant	_____	_____	_____	_____
Site Rep	_____	_____	_____	_____
Other	_____	_____	_____	_____
Other	_____	_____	_____	_____
Other	_____	_____	_____	_____

2. Communications:

___2a) All instructions to the Contractor, whether verbal, written, or by telephone will be given by (_____). No other instructions shall be recognized. Any verbal instructions shall be confirmed in writing to the Contractor. Minor clarifications may be confirmed in site reports, or meeting minutes.

___2b) Questions or solutions shall be transmitted through (_____) only.

___2c) All correspondence shall be identified by the Project Title, and Contract Number _____.

3. **Responsibilities of the Owner's Governing Body**: The Contracting Authority is the Department of General Administration, Division of Engineering and Architectural Services (E&AS) which is acting for its Client Agency _____. All contract authorization and responsibility will be managed by the E&AS Project Manager. (e.g. Change Orders)

4. **Completion Time of Contract**: Does everyone understand Contract Requirements and methods of computing?

   (Contract Completion Date is _____ calendar days after written notice to proceed.

   (i.e., NTP + _____ calendar days = Completion Date _____, 200___.)

5. **Other requirements of the Contract Documents which deserve special discussion by all parties:**

   ___a) Security Requirements: _____

   ___b) Hazardous Materials Removal (e.g. PCB, or asbestos): _____

   ___c) Construction Waste Management: _____

6. **MWBE/Affirmative Action Requirements**: It is the Contractor's responsibility to comply with the Contract Provisions, and file all required reports.

7. **Apprenticeship** participation for the project will be ____%. Reporting will be done on a monthly basis as part of the monthly invoice process. All subcontractors' reports need to be compiled into one form that is submitted with the invoice. (see example in invoice packet)

8. **The "Intent to Pay Prevailing Wages"** shall be posted on the jobsite, in an area accessible to all employees:

   Comments:(Ref. Section 5.04 in the General Conditions) _____

9. **Change Orders**: (Procedures and Approvals which must be obtained prior to implementation of changes in the field). (Ref. Part 7 in the General Conditions)

   ___a) Change Orders may originate as a request of the agency (_____) or as a change necessary due to omissions, or latent conditions.

   ___b) If a change is necessary, the (_____) shall specify the extent of the change, and obtain a cost proposal from the Contractor.

   ___c) Any increase or decrease of costs in the Contract price shall be submitted in accordance with Part 7 of General Conditions.

   ___d) One original of the Change Order Proposal or Field Authorization with original signatures is required. Four copies are requested, one each for the A/E, E&AS, Agency, and contractor.

   ___e) Field Authorization: The F.A. may be used to authorize the Start of the Change Order work, if immediate approval of the change is necessary to maintain the project schedule, protect property, or for health and safety reasons.

10. Payments

___a) Prior to application of the first payment request, the Contractor must furnish a Schedule of Values for the work to (_____), in accordance with Part 6 of the General Conditions. Labor & Industries "Intent to Pay Prevailing Wages" form must be attached to the first invoice voucher. All filing fees for Labor & Industries Prevailing Wages forms are included in the Contractor's bid, as called out in Part 5.04 of the General Conditions.

Comments: The Schedule of Values shall include line item "Project Closeout" which includes completion of O & M Manuals, training, as-built drawings, punchlist work, corrective action, etc.

___b) Requests for payments shall be made on State Voucher Forms in accordance with the Instructions, which are attached to the "Notice to Proceed" transmittal to the General Contractor. The "Invoice Voucher" (A-19 Form) must be accompanied by the "Application and Certificate for Payment on Contract".

___c) If payment is requested for materials stored on jobsite and not incorporated into the work, the "Application for Payment" must be accompanied by the "Certificate of Materials Stored on Jobsite".

___d) Payment for materials stored "Offsite" shall be in accordance with Part 6.03 Paragraph "D" of the General Conditions.

___e) Retainage: 5% Retainage is withheld for protection of sub-contractors, materialmen, and workers performing on this contract, and in accordance with Parts 6.04 and 6.06 of the General Conditions. Please note, these funds are not retained for the State's use for punchlist and contract completion. The schedule of values "PROJECT CLOSEOUT" item is established for this purpose.

Comments: Note: Contractor receives 100% sales tax on amount earned to date at time of Billing. Five percent of the amount Earned to Date LESS Washington State Sales tax is retained as noted above.

___f) Payment request forms must be checked and approved by the Contractor and the (_____) and signed in the spaces provided. ALL FOUR (4) copies of the Application for Payment and Invoice Vouchers must contain Original Signatures.

___g) Signature on the invoice vouchers by the contractor certifies that payment has been received by sub-contractors and suppliers for work and materials provided in the previous month's pay period.

Comments: New "Vendor's Certificate Statement" on A-19 Form - **VENDOR'S CERTIFICATE**. I hereby certify under penalty of perjury that the items and totals listed herein are proper charges for materials, merchandise or services furnished to the State of Washington; that all goods furnished and/or services rendered have been provided without discrimination *on* the grounds of race, creed, color, national origin, sex or age: that prevailing wages have been paid in accordance with the prefiled statement or statements of intent on file with the Department of Labor and Industries as approved by the industrial statistician: and that all sub contractors and/or suppliers have been paid less earned retainage as their interest appeared in the last payment received.

___h) A Change Order shall not be included in a monthly payment request until the Contractor has received an Owner-signed copy:

Comments: ALL OUTSTANDING Field Authorizations (FA's) and Change Order Proposals (COP's) must be converted to Change Orders (CO's) PRIOR to their billing.

11. General Comments: (Establish Monthly Cut-off Dates)

CONSTRUCTION MANAGEMENT AGENDA:

12. Permits, Fees, Testing

___a) The actual cost of the GENERAL BUILDING PERMIT and the public utility hook-up fees will be a direct reimbursement to the Contractor or paid by the Owner. (See General Conditions, Part 5, and Supplemental Conditions 5.02).

___b) All other inspection fees and permits shall be provided by (THE CONTRACTOR) or as otherwise called for in the Contract Documents. (e.g.: Electrical, Boiler, Fire, etc.)

___c) Pursuant to Section 5.02 of the Supplemental Conditions The General Contractor, when permits are procured, shall submit copies of each required and valid permit required on the project to the Owner's representative for purposes of tracking start and expiration dates and required inspection times for each permit. Nothing in this part shall be construed as imposing a duty upon the Owner or A/E.

____d) Special Testing Services: (e.g. - Paint Testing, Thermograms for Building Envelopes, etc.).

Paid by (_____).

Comments:_____

_____

___e) "Air Balancing" services shall be provided by the (_____).

___f) General Testing (e.g. Concrete Cylinders, Slump, Soil Compaction, etc.) services shall be as called for in the Technical Specifications. Testing shall be within the intervals specified, and be paid for by (_____). The State reserves the right to hire an independent testing firm at any time for its own information, and performing its own tests. The General Contractor shall give (_____) sufficient notice (i.e._____ hours) for the testing laboratory to conduct tests as specified.

13. Project Inspection:

___a) Introduce Site Representative (_____).

___b) Define Scope of Work, Lines of Authority, and Lines of Communication:_____.

14. Rights-of-Way, Easements, and Access:

___a) Explain any portion of the project site or facility not available to the Contractor _____.

___b) Define Routes of Site Access and Egress: (Security requirements, noise, speed or time limitations?)

___c) Note requirements for facilities occupancy and needs for routine operations on site. (e.g. - Areas occupied, state vehicles, normal delivery truck patterns)

___d) Coordination with Railroads, Highway Departments, City/Town Municipalities, Power, Sewage, etc.

15. Staking of Work: Define responsibilities of the surveyor and the Contractor. Line and grade to be furnished by (_____ _____). (Locations of Bench Marks?)

16. Submittal Data:

___a) The Contractor shall submit a list of sub-contractors to (_____) for approval in accordance with Section 5.2~~1~~*0* of the General Conditions.

___b) The Contractor shall submit a list of materials to the (_____) for approval (List of Materials).

___c) The Contractors shall submit shop drawings to the (_____) for approval in accordance with Section 4.03 in the General Conditions. Define Shop Drawings and Submittal Procedures:

___d) The Contractors shall submit a Construction Waste Management Plan per Division I.

17. Contractor's Schedule: Section 3.02 and Specifications Section (_____).

___a) Analyze the construction schedule requirements in sufficient detail to enable the owner to plan his operations: (Consideration must be given to the activities of the facility and the operations of other contractors on-site).

___b) Major Equipment, Building Materials (Procurement), and all subcontractors shall be represented on the schedule in sufficient breakdown and detail.

___c) Date required for first schedule submission (_____). Submit schedule with first material submittal.

18. Materials:

___a) Establish Contractor's plans for delivering materials to the project site. (Protection and storage of materials? Notification? Approvals by whom? Location of laydown area?)

___b) LABELING & IDENTIFICATION: In order to avoid delay and confusion at facilities, require ALL suppliers to label shipments with proper identification:

Project No. _____

Contract Title _____

Facility Address _____

Contractor's Name _____

19. Utilities:

___a) Guidelines for the Contractor's use of State utilities during construction phases. (Power, water, sewer, etc.) Section 5.14 in the General Conditions.

___b) Notify appropriate Utilities a minimum of 48 hours prior to any disruptions to existing utilities (Power, water, sewer, security systems, fire systems, steam, etc.).

___c) Call 1-800-424-5555 48 hours before you dig. Mark "Locate" areas with white paint.

___d) Fire Protection - (Sprinkler or Smoke Detection Systems): Procedures for:

Activation or Deactivation _____

False Alarms _____

Fires and Welding _____

20. Construction Progress Meetings. Set up times and intervals for construction progress meetings.

Day: _____, Time: _____, Location: _____.

21. Drawings:

___a) The Contractor shall have a set of all "approved" drawings on site at all times (e.g. - Shop Drawings, Stamped Electrical Drawings, etc.) per Section 4.02.

___b) The Contractor is reminded of the importance of maintaining "As-Built" drawings during construction. These drawings shall be made available onsite for periodic review during the project, and be submitted to (_____ _____) at the completion of the work.

22. Safety and Sanitary Regulations. Pursuant to Section 5.07 Supplemental Conditions the General Contractor shall submit a site-specific safety plan in accordance with the State Department of Labor & Industries regulations. The Safety Plan shall be reviewed at each regularly scheduled progress meeting with emphasis on items that will occur before the next regularly scheduled progress meeting. Nothing in this part shall be construed as imposing a duty upon the Owner or A/E to prescribe safety conditions relating to employees, public, or agents of the Contractor.

The contractor shall comply with all state sanitary regulations**.**

23. Prior Occupancy (Section 6.08 of the General Conditions). The Owner has the right to occupy portions of the project prior to the final acceptance. Guarantees of work for those portions of the work shall be dealt with as provided for in Section 6.08.

24. The Contractor is responsible for all coordination and layout of his work, and that of his sub-contractors; to insure that all rough-in and installation of mechanical, electrical, structural, and all other related systems is accomplished in such a manner to allow the completion and final operation of the project as intended in the Contract Documents.

25. The Contractor is responsible for advising his sub-contractors and vendors of the applicable items discussed at this conference.

26. New Items:

STATE OF WASHINGTON
DEPARTMENT OF GENERAL ADMINISTRATION
DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES
206 General Administration Building, P.O. Box 41012, Olympia, WA 98504-41012
Telephone 360-902-7272 Fax 360-753-2848

REQUEST FOR INFORMATION

RFI No. _____

Project: _____ Project No. _____

Originator: _____

Item: _____

Ref. Dwg. or Spec.: _____

_____

Date Reply Required: _____ Critical Schedule: Yes _____ No _____

QUESTION

_____

_____

_____

_____

Subcontractor: _____ Date: _____
(signature)

General Contractor: _____ Date: _____
(signature)

RESPONSE

_____

_____

_____

_____

_____

_____

_____

_____

_____

Reviewed by: _____ Date: _____

cc: Owner _____ Contractor _____ Mech. _____ Elect. _____ Struct. _____ Civil _____ Landscape _____ Other _____

APPENDIX VI

SIGNATURE BLOCK

APPROVED BY: _____
(Client Agency Name) **DATE**

APPROVED BY: _____
DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES **DATE**

- **APPROVED BY:** _____
(*Governor's ADA Program Manager)* **DATE**

NOTE:
This minimum required signature block shall be used both in the project manual preceding or following the title sheet; and on the title sheet of the drawings for bid and construction.

Additional signatures may be required by the agency.

- *For major projects (projects with budgets of $5,000,000 or greater) a signature space for the Governor's ADA Program Manager may be required by the client agency.*

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STATE OF WASHINGTON

DEPARTMENT OF GENERAL ADMINISTRATION

DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES

CONTRACT No.:

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT:

CONTRACTOR:

A/E CONSULTANT:

OWNER/AGENCY:

DATE OF ISSUANCE:

DEFINITION OF SUBSTANTIAL COMPLETION

Part 6, paragraph 6.07, of the General Conditions of the Contract. "Substantial Completion is the stage in the progress of the Work (or portion thereof designated and approved by Owner) when the construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can fully occupy the Work (or the designated portion thereof) for the use for which it is intended."

DESIGNATED PORTIONS OF THE PROJECT SHALL INCLUDE:

Work performed under this contract has been reviewed and to the best of our knowledge found to be substantially complete.

The Date of Substantial Completion for the work described above is hereby established as: **(date)**

The Contractor will complete or correct the work on the list of items attached hereto within _____ calendar days.

RECOMMENDED BY:

A/E CONSULTANT	BY	DATE

APPROVED BY:

Engineering and Architectural Services	BY	DATE

ACKNOWLEDGED BY:

CONTRACTOR	BY	DATE

Items to be corrected:

9/20/1996

Download Form

PRE-AGREEMENT CONFERENCE CHECKLIST

DIVISION OF ENGINEERING AND ARCHITECTURAL SERVICES

Project No._____ Date_____

Title _____

*_____

Name of Client Agency *Address (Including Zip Code)*

*_____

Name of Using Agency *Address (Including Zip Code)*

Division of E & A Services 206 Gen. Admin. Building, Olympia, WA 98504-1012

Name of Contracting Agency *Address (Including Zip Code)*

*_____

Name of Consultant (Firm) *Address (Including Zip Code)*

_____

Location of Conference

Representatives at Conference:

	Person	*Phone*	*Fax*
Client Agency	_____	( )_____ - _____	( )_____ - _____
Using Agency	_____	( )_____ - _____	( )_____ - _____
E&AS PM	_____	( )_____ - _____	( )_____ - _____
Consultant	_____	( )_____ - _____	( )_____ - _____
Other	_____	( )_____ - _____	( )_____ - _____
Other	_____	( )_____ - _____	( )_____ - _____
Other	_____	( )_____ - _____	( )_____ - _____

1. Communications:

___ Role of E&A Services

___ Role of Client Agency

___ Role of Consultant

2. Review of Agreement:

___ **A/E Instructions**

Planning & Design
Construction Documents
Bidding, Printing, & Permits
Construction Administration
Project Close-out
Appendices
Abbreviations
RCWs & WACs
Invoice Instructions
State Boilerplate
Forms
Energy & Environmental Guidelines
Energy Life Cycle Cost Guidelines
Indoor Air Quality Guidelines
Value Engineering Guidelines
Commissioning Guidelines
CAD Standards
Client Design & Construction Standards
Division 01
As-Built Drawings

___ **Agreement**

Basic Services
Additional Services
Project Management Conditions
Site Visits for Construction Phase
MWBE Utilization
Schedule of Performance
Scope of Work for Basic Services
Scope of Work for Additional Services

___ **Conditions of the Agreement**

Owner's Responsibilities
Basic Services of A/E
Additional Services & Reimbursables
A/E's Estimate of Construction Cost
Approvals of design phases
Basis of Compensation
Compensation for Basic Services
Compensation for Additional Services & Reimbursables
Compensation for Changes During Construction
Voluntary MWBE Participation
Termination & Suspension
General Requirements

Quality Assurance

Attachment B - Document Requirements

___ A/E Fee Guidelines (Fee Schedule)

___ Insurance

___ Modifications to the Agreement

3. Review of Project:

___ Scope

___ Budget

___ Schedule

___ Special Requirements

4. Notes:

Provide a schedule and detailed proposal based upon these needs for our review.

A/E Instructions

Guidelines

APPENDIX VII

Commissioning Guidelines

1.0 PURPOSE

The purpose of the commissioning guidelines is to establish the project commissioning requirements, including those requirements to be specified in the construction documents. The commissioning process is to ensure that the facility's mechanical, electrical and designated systems' performance meets the design intent and the owner's functional criteria and operational needs.

2.0 GOAL

The goal of commissioning is to deliver a facility that operates as it was intended, meets the needs of the building owner and occupants, and provides training of facility operators. To reach this goal it is necessary for the commissioning process to provide documentation and verification of the performance of all building equipment and systems. For the process to work successfully it is equally important to have good communications between all participants (building designers, owners, operators and the commissioning agent) and to keep all parties involved and informed of all pertinent decisions.

3.0 APPLICABILTIY

Building Commissioning is strongly recommended for all major facilities. The need for building commissioning on other facilities will be determined by the owner's representative and the project manager based on the complexity of the systems installed.

4.0 BASIC FEE OR ADDITIONAL SERVICE

Building Commissioning is considered an additional service. A separate commissioning firm will be contracted with to perform the commissioning agent's functions. The time spent by the A/E in preparing for the commissioning activities are considered an additional service.

5.0 DESCRIPTION

The process of commissioning a facility is a team effort involving the project manager, building owners, designers, contractors, operators and the commissioning agent. The parties responsible for the various tasks involved in the commissioning process differ with each project and depend on the size of the facility and the complexity of systems and controls. Smaller projects may have overlapping or interchangeable roles for the team members. Flexibility is essential when defining responsibilities of the team members so that the needs of each individual project can be met. The following description of roles and responsibilities of team members would be typical for larger projects.

Project Manager (PM): the Department of General Administration, through the Division of Engineering and Architectural Services (E&AS), is the contracting authority for design and construction of public works projects for state owned facilities for numerous state agencies. E&AS assigns a PM to manage projects. The PM is the owner's representative.

Building Owner: defines the functional and operational use of the facility, setting the operating requirements, such as the occupancy schedules, ventilation requirements for the various areas of the facility, and control and lighting requirements for the facility.

Architect/Engineer (A/E): typically the architect or engineer who is the primary consultant. The designer documents the design intent of all systems and controls, monitors construction activities, and reviews and approves shop drawings, mock-ups of operation and maintenance manuals, as-built drawings and documentation.

Building Contractors: assist with the development and execution of the functional performance test procedures for all systems. The contractor also helps facilitate the commissioning schedule to keep the project proceeding smoothly.

Building Operators: assist the contractor with the functional performance tests and are responsible for

attending the contractor and vendor training.

Commissioning Agent (CA): an independent agent, who acts as representative to the facility Owner, and is typically not associated with the Architect/Engineer (A/E) team members or Contractor. The CA contracts with E&AS and reports directly to the E&AS PM.

5.1 DEFINITIONS

Building Commissioning - the process of achieving, verifying and documenting the performance of building systems to meet the design intent and the client's functional and operational needs. It is the advancement of systems from static completion to full dynamic working order according to the specified requirements. Building Commissioning is a team effort to ensure that all equipment and systems have been completely and properly installed and put into service. The team is made up of the Commissioning Agent, Owner, A/E, and Contractor. Commissioning is primarily part of the acceptance process. However, some commissioning activities occur during both design phase and warranty period as described under section 5.2 RESPONSIBILITIES.

Commissioning process - a complete and thorough investigation of mechanical, electrical, safety, control, and communication systems to ensure proper installation and operation of all components and systems. ATTACHMENT 2, SYSTEMS TO BE COMMISSIONED provides a potential list of systems that could require commissioning. The following provides the systems that could be evaluated and tested when those systems are selected to be included in the commissioning process:

HVAC Systems

- Automated energy management and temperature controls,
- Instrumentation (gauges, thermometers, etc.)
- Air handlers
- Ductwork
- Packaged units (air conditioners and heat pumps)
- Terminal units (air)
- Unit heaters
- Heat exchangers
- Computer room units
- Fume hoods
- Lab pressures
- Specialty fans
- Testing, adjusting and balancing
- Variable frequency drives
- Indoor air quality
- Equipment sound control
- Equipment vibration control
- Egress pressurization
- Fire and smoke dampers
- Pumps
- Boilers
- Chillers
- Cooling towers
- Hydronic and steam distribution systems

Electrical System

- Lighting controls (sweep or scheduled, daylighting dimming, lighting occupancy sensors)
- Motor starters and controls
- Elevators, escalators, automatic doors, dock levelers, etc.
- Emergency power systems
- UPS system
- Power quality
- Communication systems (voice and data systems usually purchased separately)
- Security systems

- Fire and smoke alarms
- Fire protection system

Other
- Drainage systems
- Water wells
- Refrigeration systems
- Water treatment
- Plumbing systems
- Service water heaters
- Service water booster pumps
- Medical gas system

Systems Concept and Operations Manual - describes the design intent and expected operation of the systems. This document lays the groundwork for system acceptance as well as commissioning. Included in this document will be the basis for design, detailed sequence of operations and narrative description of system operation in lay terms. The System Concept and Operation Manual is not the same as the Operation and Maintenance Manual. A suggested outline for the Systems Concept and Operations Manual follows:

Indoor and Outdoor Design Conditions
Dry bulb and wet bulb temperatures
Relative humidity
Thermostat setpoints

Building Function
Occupancy
Usage
Schedules

Building Zoning Rationale

Load Calculations
Internal loads assumptions
Building envelope assumptions

Air Distribution Criteria and Calculation
Air quality design criteria
Ventilation requirement calculations
Equipment sizing criteria

Sequence of Operation
All seasons
Occupied and unoccupied modes

Narrative Description of System Operation for Each System

Energy Conservation Measures

Fire and Life Safety Design Intent

Noise Criteria

Maintenance Schedules

Operation and Maintenance Manual - describes the operation of systems and system components including manufacturer's technical data; including maintenance, operating, start up, shut down and trouble shooting information. A suggested outline for the maintenance manual is provided in ATTACHMENT 1, OPERATION AND MAINTENANCE MANUAL OUTLINE:

5.2 RESPONSIBILITIES

This section describes the responsibilities of all parties for the commissioning process.

5.2.1 COMMISSIONING AGENT (CA)

The purpose of a CA review of any phase of the project is to facilitate the commissioning process. The CA is not responsible for design concept, design criteria, compliance with codes, design or construction scheduling, cost estimating, or construction management. If any action by the CA causes a conflict between parties of the commissioning effort, the CA must be a participant in the conflict resolution.

DESIGN PHASE: The CA should be included in the Schematic Design phase of the project, and will assist the A/E in preparing the Systems Concept and Operations Manual. The CA will prepare a commissioning plan, provide the A/E with a complete description of the commissioning requirements, and review design documents for coordination of requirements.

CONSTRUCTION PHASE: The CA will review Contractor's submittals for compliance with commissioning needs concurrently with the A/E team review.

ACCEPTANCE PHASE: The CA will assist the Contractor to schedule the field commissioning at least 30 days prior to beginning field commissioning. CA will coordinate commissioning efforts as required until functions of all systems have been fully demonstrated and are accepted by the Owner, upon the recommendation of PM, A/E and CA. The CA will review the Operation and Maintenance Manuals for compliance with commissioning requirements. The CA will review equipment warranty responsibilities to ensure that all Owner’s responsibilities are explicitly listed including time schedule and procedures for routine maintenance. CA will report to the Owner the results of all commissioning activities in each phase of the work and, when appropriate, make recommendation of actions required. The CA will prepare written progress reports of results of performance testing for the Owner. The testing, adjusting and balancing firm will be contracted by the CA. The CA will attend and review the material used to train the Owner's personnel.
WARRANTY PERIOD: The CA will perform recommissioning of appropriate systems during warranty period at change of seasons. At completion of commissioning, the CA will prepare a final written report describing results of all performance testing and corrective actions recommended.

5.2.2 ARCHITECT/ENGINEER

DESIGN PHASE: The A/E team members will prepare the Systems Concept and Operations Manual with the assistance of the CA, and provide the PM with four copies.

The A/E team will include in the project specifications instructions to the contractor describing the contractor's responsibilities in the commissioning process. No part of these instructions shall be construed to relieve the A/E of any responsibility assigned under the contractual agreement. The A/E is responsible for providing a complete and working design, construction documents, compliance with codes, permits, scheduling, cost estimating, review of the contractor's shop drawings and submittals, construction observation and preparation of as-built drawings as described in the A/E agreement.

The traditional and contractual duties of the A/E are not altered by this document. If a conflict arises between this document and the A/E agreement, the A/E agreement takes precedence.

The A/E will work cooperatively with the CA and the Owner to provide a properly commissioned project.

5.2.3 OWNER

DESIGN PHASE: The Owner will provide comprehensive information as to functional and programmatic requirements for the building. The Owner must authorize work performed by the A/E or CA and approve the costs.

ACCEPTANCE PHASE: The Owner will make final decisions regarding results of commissioning activities. The Owner will arrange for facility maintenance personnel to attend field commissioning and training sessions and will designate the lead person.

WARRANTY PERIOD: The Owner will notify the A/E of any deficiencies before or during warranty period. During the warranty period, the Owner and building operators should not make any system adjustments, alterations or repairs without first contacting the A/E. Adjustment of room thermostats may be made at building occupant's discretion. In the event that adjustments, alterations or repairs are necessary, the PM should be contacted as soon as possible so that the Contractor can carry out a permanent repair.

Emergency repairs and adjustments may be made to prevent damage to system or building components without first contacting the A/E if followed up in writing to the A/E, PM, and Contractor. Emergency procedures would include items such as repairing leaks, adjusting controls to prevent building freeze-up or other similar adjustments to prevent the building from becoming uninhabitable or unsafe.

Maintenance procedures that are the responsibility of the building Owner during the warranty period may include, but may not be limited to, the following unless specified differently in the construction contract:

- Replacement of air filters
- Replacement of fuel filters
- Replacement or repair of any items which are broken or damaged by building users
- Replacement of water softener salt
- Filling boiler with water and fuel
- Replacement (if required) of acid neutralization marble
- Cleaning of oil separators or grease traps, and liquid filters
- Replacement of belts
- Lubrication of motors and pumps

5.2.4 CONTRACTOR

CONSTRUCTION PHASE: The Contractor will prepare the Operation and Maintenance Manuals.

ACCEPTANCE PHASE: A representative of the sub-contractor for each applicable trade will carry out performance testing under the observation of the CA and others as described in the commissioning schedule. Contractor will correct discrepancies between the Construction Documents and the commissioning results. The Contractor will provide training for Owner's personnel.
WARRANTY PERIOD: The Contractor will identify Owner's warranty responsibilities required to maintain validity of warranty, explicitly listing time schedules and procedures for any routine maintenance. The Contractor will coordinate with warrantors to determine specific requirements to maintain the validity of the warranty.

No part of these instructions shall be construed to relieve the Contractor of any responsibility assigned under the construction contract. The Contractor is responsible for submission of shop drawings and submittals, construction according to the drawings and specifications, start up procedures, and as-built drawings as described in the Construction Documents.

The traditional and contractual duties of the Contractor are not altered by this document. If a conflict arises between this document and the contract, the contract takes precedence.

The Contractor will work cooperatively with the CA, A/E, and the Owner to provide a properly commissioned project.

5.2.5 PROJECT MANAGER

The PM manages the A/E agreement, the construction contract, and the commissioning contract.

6.0 TRAINING:

Contractor will explain any special features or intricacies of system operation to the building operating personnel during training sessions. Items covered should include safety features, hazards to be aware of, precautions to be observed to avoid damage to equipment and any necessary seasonal adjustments. Generally discuss service frequency for devices such as bearings, belt drives, filters, strainers, etc. This information should be clearly stated in the O&M Manuals for reference. Training sessions may be video taped.

7.0 CERTIFICATION:

ATTACHMENT 3, COMMISSIONING CERTIFICATE OF COMPLETION will need to be signed by each trade listed, indicating that all commissioning work has been completed and that all systems are installed according to the contract documents and manufacturer's installation instructions. The Contractors further certify that all adjustment, lubrication, alignment and startup procedures have been carried out.

ATTACMENT 1

OPERATION AND MAINTENANCE MANUAL OUTLINE

1. *The system division will be organized into sections by system and major sub-system. For example, each major fan system will be completely documented in its own section. For each section include the following sub-sections as appropriate:*

    a. ***Descriptive Information***
        (1) Function or service area served
        (2) Classification
        (3) Design capacity
        (4) Performance characteristics
        (5) Principal components
        (6) Distribution arrangement
        (7) Schematic diagram
        (8) Control diagram
        (9) Commissioning plan
        (10) Results from system functional performance tests
        (11) Equipment list referenced to Equipment Division

    b. ***Operating Instructions***
        (1) Starting and stopping procedures
        (2) Adjustment and regulation
        (3) Seasonal changeover
        (4) Seasonal start-up
        (5) Seasonal shutdown
        (6) Logs and records
        (7) Part load performance

    c. ***Control System***
        (1) Panel layout sheets
        (2) Point checkout sheets
        (3) As-built control diagrams
        (4) As-built ladder diagrams with hardware interlocks
        (5) Reduced floor plans showing sensor, terminal and panel locations

    d. ***Inspection and Maintenance***
        (1) Inspection schedule and checklist
        (2) Schedules and procedures for lubrication, replacements, adjustment, calibration, cleaning, painting, protection, and testing.
        (3) Inspection and maintenance records

2. *Reference documents should include the following:*

    a. Construction drawings list
    b. Construction specifications
    c. As-built record drawings
    d. Test and balance records
    e. Commissioning Reports
    f. Copies of certificates and reports, for example:
    Plumbing sanitization, boiler start up, include stack gas test, accumulation test, safety valve test, hydronic system water analysis, steam boiler water analysis, electric inspection, fire marshal inspection, and elevator inspection.
    g. List of A/E, sub-consultants, contractors, and sub-contractors with addresses and telephone numbers

3. *The equipment division is composed of manufacturers' and fabricators' data on equipment and materials organized into sections by generic classifications of equipment. Within each section organize sub-sections of*

specific types of equipment.

Each section includes the following information for each equipment item as appropriate:

a. ***Descriptive Literature***
- *(1) Catalog cuts, brochures, or shop drawings*
- *(2) Dimensional drawings*
- *(3) Materials of construction*
- *(4) Parts designations*

b. ***Operating Characteristics***
- *(1) Performance tables and charts*
- *(2) Performance curves*
- *(3) Pressure, temperature, and speed limitations*
- *(4) Safety devices*

c. ***Operating Instructions***
- *(1) Pre-start checklist*
- *(2) Start-up procedures*
- *(3) Inspection during operation*
- *(4) Adjustment and regulation*
- *(5) Testing*
- *(6) Detection of malfunction*
- *(7) Precautions*

d. ***Inspection Instructions and Procedures***
- *(1) Normal and abnormal operating temperatures, pressures, and speed limits*
- *(2) Schedule and manner of operation*
- *(3) Detection signals*

e. ***Maintenance Instructions and Procedures***
- *(1) Schedule of routine maintenance, schedule of preventive maintenance*
- *(2) Procedures*
- *(3) Troubleshooting*
- *(4) Overhaul specifications for major equipment*

f. ***Parts List***

g. ***Spare Parts***
- *(1) Essential inventory*
- *(2) Distributor directory*

h. ***Service and Dealer Directory***

i. ***Warranty***

j. ***Service Contracts***

ATTACHMENT 2

SYSTEMS TO BE COMMISSIONED

The following list provides potential systems that could require commissioning.

4.0 AIR DISTRIBUTION:

The CA will verify and report on the operation and accessibility of the following items.

4.1 EQUIPMENT:

4.1.1 Air filtration, dampers, diffusers, grilles, fire dampers and access doors.
4.1.2 Hoods and exhaust systems.
4.1.3 Heat buildup or noise in motor or shaft bearings.
4.1.4 Humidification equipment.

4.2 BALANCING: Perform balancing for the following devices:

4.2.1 Motor current draw. Compare running current to nameplate full load amps rating.
4.2.2 Motor starter contactor size and overload heater size.
4.2.3 Voltage and rotation of each motor driven fan or air handling device.
4.2.4 Belt tension and drive alignment.
4.2.5 Airflow at outlets with the thermostat adjusted to simulate full cooling, full heating, hood operation, etc. where appropriate.
4.2.6 Airflow at each air handler at simulated full cooling and/or maximum fresh air.
4.2.7 Airflow at each fume hood based on sash positions.
4.2.8 Air flow at each range, dishwasher and process hood.
4.2.9 Room static pressure with respect to adjacent spaces and outdoors.
4.2.10 Outside air rate into system.
4.2.11 Drafts or noise from air distribution devices.

5.0 PLUMBING AND PIPING SYSTEMS: The CA will verify and report on the operation and accessibility of the following items.

5.1 EQUIPMENT

5.1.1 Sewage lift pump.
5.1.2 Sump pumps.
5.1.3 Chemical feed equipment.
5.1.4 Air compressor, deionized water equipment and other process equipment.
5.1.5 Pump motor current draw. Compare running current to nameplate full load amps rating. Overload heater size.

5.2 PIPING

5.2.1 Strainers, valves, fixtures, steam traps, air purge, and blow down systems, and instrumentation and flow measuring or control. Bypass and shut off valves for maintenance.
5.2.2 Cleaning, degreasing and flushing of piping systems.
5.2.3 Fluid temperatures and pressures.
5.2.4 Fuel supply system. Check for water in fuel.
5.2.5 Test ports for temperature, pressure and chemical treatment measurements.

5.3 WATER AND STEAM TREATMENT

5.3.1 Filling of hydronic and chilled water systems.
5.3.2 Glycol concentration and pH.
5.3.3 Specific conductance.
5.3.4 Total alkalinity.
5.3.5 Suspended solids.
5.3.6 Silica.
5.3.7 Additives for steam system and protection of the condensate piping.
5.3.8 Chemical or additive injection systems.

6.0 HEATING AND COOLING PLANT EQUIPMENT:

The CA will verify and report on the operation and accessibility of the following items.

6.1 Service access.
6.2 Compressors.
6.3 Chillers.
6.4 Boilers.
6.5 Cooling towers.
6.6 Combustion air and exhaust systems.
6.7 Safety devices and controls.

7.0 CONTROL SYSTEMS:

The CA will verify and report on the operation and accessibility of the following items.

7.1 Functioning of each control program.
7.2 Functioning of each hardware control point.
7.3 Instruction and training for Owner's operating personnel in the proper operation of the systems. The balancing contractor will correct flows and assist in fine tuning system.
7.4 Functioning of following devices:
- Thermostats and temperature sensors,
- Automatic dampers and valves,
- Fresh air and return air dampers,
- Economizer operation,
- Air handler, boiler, chiller and pump starting and stopping from program control,
- Exhaust fan and air handler start and stop,
- Variable air volume control of VAV air handlers, and tracking of associated return fan,
- Surge and transient protection,
- Freeze prevention control,
- Labeling of each control device.

7.5 Function of control loops
- Time schedules,
- Optimum start/stop,
- Reset type schedules,
- Demand limiting,
- Alarm sequences,
- Maintenance alarms,
- Remote communication (modem),
- Low (or high) limits, and
- Other system programming features.

7.6 Safety devices.
7.7 Instrumentation, gauges, thermometers, flow measuring devices.
7.8 Shutdown of air handling systems in the event of presence of smoke or products of combustion.

8.0 ELECTRICAL:

The CA will verify and report on the operation and accessibility of the following items. Use NETA testing

procedures where applicable.

8.1 Circuit breakers, and protective relays.

8.2 Low voltage circuit breakers, motor starters, motor controls,

8.3 Setpoints, sensitivity and location of lighting controls.

8.4 Equipment ground fault interruption devices.

8.5 Emergency power systems.

8.6 Fire alarm system.

8.7 Communication systems including, but not limited to, telephones, television, intercoms, local area networks (when included in the project).

ATTACHMENT 3

Commissioning Certificate of Completion

Project No. _____ Date _____

Project Title _____

Building _____

Address _____

Contractors providing the following services for this project:

Mechanical _____
firm name

_____
signature *title* *date*

Electrical _____
firm name

_____
signature *title* *date*

Plumbing _____
firm name

_____
signature *title* *date*

Sheet Metal _____
firm name

_____
signature *title* *date*

Balancing _____
firm name

_____
signature *title* *date*

Controls _____
firm name

_____
signature *title* *date*

Fire Protection _____
firm name

_____
signature *title* *date*

Elevator _____
firm name

_____
signature *title* *date*

other _____
firm name

_____
signature *title* *date*

The Commissioning Agent has observed the commissioning process and acknowledges that it was carried out according to the contract documents.

Commissioning _____
firm name

_____
signature *title* *date*

The Client Agency acknowledges receipt of the following documents and services:

1. Operating and Maintenance Manuals
2. As-Built Drawings
3. All certificates
4. Operator instruction

Client Agency _____
firm name

_____
signature *title* *date*

APPENDIX VIII

Energy and Environmental Guidelines (Resource Efficient Design)

1.0 Purpose

It is the policy of the State of Washington to have buildings designed that are resource efficient. It is the purpose of this guideline to provide information to the A/E in complying with state policy regarding energy efficiency and protection of the environment. This guideline can be implemented by the use of design practices aimed at achieving resource efficiency throughout the life of the facility. Resource Efficient Design minimizes the use of energy and water; utilizes products containing recycled material or products that are recyclable; diverts construction, demolition, and land clearing (CDL) waste from solid waste facilities, i.e. land fills; and, reduces the impact on fish and wildlife habitat.

2.0 Goals:

The goals to be achieved in Resource Efficient Design of buildings include:

- Resource Efficient Design practices shall be included in any project for the construction of a new building or the remodeling of an existing building or facility.

- The minimum expected level of energy and water efficiency shall be in compliance with the requirements of the non-residential energy code and local building codes.

- Projects shall also meet or exceed current practices regarding use of recycled materials and reuse of CDL waste.

- Target a total of 20% of the building materials used in the project as measured by cost having recycled content and 60% of the CDL waste as measured by weight being salvaged, recycled or reused. Exclusion: waste considered hazardous is not included in the estimate. See Appendix V, Division 1 for the section on Construction Waste Management.
- Minimize energy use for heating and cooling, by utilizing high performance envelopes, energy efficient equipment, appliances, lighting, and renewable resources. Examples of renewable resources include geothermal, waste heat recovery, solar and natural lighting.

- Use water efficient plumbing fixtures and irrigation systems. Also, incorporate landscaping that requires little to no irrigation.

- Protect and enhance fish and wildlife habitiat where practical.

- Provide safe and healthy buildings by use of products that emit particulates and chemical vapors below the rates specified in the Indoor Air Quality Guidelines.

- Minimize impacts from processes, such as laundries, kitchens, etc., on local wastewater treatment facilities.

- Provide spaces for recycling collection efforts where recyclable materials are generated such as copy and print machine areas, kitchen and dining areas, lunchrooms, etc.

- Provide storage and staging space for pick-up at a level appropriate for the projected recycling potential.

- Provide space for composting, where applicable.

- Provide covered lighted waiting areas for public transportation, where appropriate.

- Provide space for securable covered bike storage, where appropriate.

- Provide shower and locker facilities to accommodate those arriving on bicycles or on foot, as appropriate for the size of the facility.

3.0 Applicability

This policy applies to all public works projects under the direction of E & A S.

4.0 Basic Fee or Extra Service

4.1 The goals described in this guideline are considered to be a basic service requirement.

4.2 When approved by the Owner, enhanced Resource Efficient Design practices may be included as an additional service to the Agreement. Additional service fee shall be based on the results achieved, in other words, fee "incentives" shall be derived from consultant performance in this area. To be considered for an additional service fee, the A/E shall develop a Resource Efficient Design plan which outlines the extra ordinary measures to be incorporated into the design, the expected results, and means to measure if results have been achieved.

5.0 Description & Responsibilities of Participants

5.1 The A/E will ensure that Resource Efficient Design practices shall be included in any pre-design study to the maximum extent practicable and economical.

6.0 Hazardous Waste

6.1 A hazardous waste consultant should be hired when there is a potential of hazardous waste. Site contamination from previous activities on the site, such as industrial uses; and demolition of existing structures that could contain hazardous materials, such as asbestos, are situations that may warrant a hazardous waste consultant.

6.2 Use reputable recycling companies for disposal of fluorescent and HID lamps and ballast. Contact the Department of Ecology, Hazardous Substances Information Section, for assistance in selecting a hazardous waste recycler or contractor. Removal of old lamps and ballast may not by thought of as hazardous waste, however, concentrations of 25 lamps or more contain enough mercury to be considered toxic, and ballast containing PCBs are a hazardous waste. Many of the lamp and ballast components can be recycled. Documentation of the recycling or proper disposal of hazardous wastes associated with fluorescent and HID lamps, such as mercury; and ballast, such as PCBs, should be provided by the recycling or disposal company. Proper documentation of the recycling and/or proper disposal of hazardous wastes will minimize litigation risk associated with the hazardous wastes.

APPENDIX IX

Energy Life Cycle Cost Guidelines

1.0 General

It is the policy of the State of Washington, as required by RCW 39.35, that major facility designs be based on the total life cycle cost, including the initial construction cost, the cost of the energy consumed, and the costs of the operation and maintenance of the facility over its economic life.

Therefore, an Energy Life Cycle Cost Analysis (ELCCA) shall be prepared for any major facility (defined as having twenty-five thousand square feet or more of usable floor space) that is to be constructed or renovated by any public agency. The preparation of an ELCCA is considered an extra service to the basic agreement.

The latest version of the "Energy Life Cycle Cost Analysis Guidelines for Public Agencies" shall be used for the preparation of ELCCAs, the reporting of results and the definition of terms. For further information visit the ELCCA web page (http://www.ga.wa.gov/eas/elcca). A complete copy of the Energy Life Cycle Cost Analysis Guidelines for Public Agencies is available from E&AS.

The following supplements the ELCCA Guidelines and shall be met by the A/E Consultant and ELCCA Analyst preparing the ELCCA for E&AS.

2.0 Participants and Responsibilities

The responsibilities outlined herein are in addition to or a clarification of those in the ELCCA Guidelines. They do not constitute a complete listing of the responsibilities of each participant.

2.1 The PM will contract for the ELCCA analyst early in the Schematic Design Phase. The PM may contract with the A/E Consultant, with the Value Engineer, or with a third party to provide ELCCA analyst services.

2.2 The A/E Consultant shall coordinate a meeting during the Schematic Design Phase to identify and recommend energy conservation measures that may be incorporated into the ELCCA Work Plan. The following shall be invited to participate: Owner's representative, Project Manager, ELCCA Analyst, Mechanical and Electrical Sub-Consultants, electric and gas utility representatives, and the ELCCA reviewer. The A/E Consultant shall participate in all phases of the ELCCA process as described in the ELCCA Guidelines.

2.3 The E&AS Lead ELCCA engineer or designee will be the ELCCA reviewer for projects accomplished under the direction of E&AS. The ELCCA reviewer and PM will coordinate reviews and approvals to comply with project milestones. The ELCCA reviewer will participate in all phases of the ELCCA process as described in the ELCCA Guidelines.

2.4 The ELCCA analyst shall prepare and submit the Work Plan for approval by the ELCCA reviewer prior to the completion of the Schematic Design. The energy simulation software shall be identified on the Work Plan. The ELCCA analyst shall participate in all phases of the ELCCA process as described in the ELCCA Guidelines.

2.5 The ELCCA analyst shall prepare and submit the report to the ELCCA reviewer. The ELCCA analyst will have the report approved prior to opening of construction bids.

2.6 The Project Manager as the State's authorized representative and the client agency will perform the

Owner's function.

2.7 The A/E Consultant shall complete the Verification Checklist as part of the punch list inspection. A copy of the signed Verification Checklist shall be submitted to the ELCCA reviewer.

3.0 Energy Analysis

There are three approved methods for complying with the ELCCA Guidelines. They are the Prescriptive Path, Prototypical Design, and Detailed Analysis. The method will be determined during the development of the Work Plan.
An acceptable ELCCA is dependent upon good prior planning and engineering. The following criteria should be considered when involved in the development of a major project:

3.1 The formal ELCCA process begins in the Schematic Design Phase. However, energy efficiency and energy systems need to be considered in the pre-design and budget phase. Project budgets must be adequate to allow for the installation of efficient building systems.

3.2 The Work Plan is developed by the ELCCA analyst in collaboration with the ELCCA reviewer. The energy systems to be analyzed are presented in the Work Plan.

3.3 Do not conduct a detailed analysis of anything that the Owner will not allow to be included in the final design.

3.4 The ELCCA for the first phase of a project should consider future phases to ensure appropriate long-term solutions. Future ELCCAs will only require updating.

3.5 In a campus facility consider the potential impact on existing systems when conducting the analysis.

4.0 Report

The report is used to convey the results and recommendations of the ELCCA to both a technical and non-technical audience. It must be understandable by reviewers who are familiar with the project and others who are not familiar with the project. In addition to the instructions included in the ELCCA Guidelines the following items shall be included:

4.1 The Project name and E&AS project number shall be included on the report cover and title page.

4.2 Include a copy of the building simulation inputs for the computer model for the base run and copies of pages of subsequent runs that change, with changes highlighted. Auxiliary reports (such as Trane Traces' Engineering Checks) should be included if available, to facilitate review.

5.0 Installation & Commissioning

5.1 When the Owner has selected and approved the ELCCA recommendations, the A/E Consultant shall proceed to incorporate these recommendations into the construction documents. In the event the A/E Consultant fails to incorporate the recommendations into the construction documents, it will be considered a design error and the A/E Consultant will be liable to reimburse the State for any lost utility incentive, to provide for the correction of the error, or to reimburse the State for the present value of the lost energy savings over the economic life of the building.

5.2 The A/E Consultant shall include a statement in the construction documents to inform the contractor of the importance of proper installation of the energy conservation measures. The statement shall also provide for the reimbursement to the State for any lost utility incentive, correction of improperly installed measures, or the reimbursement to the State for the present value of the lost energy savings over the life of the building.

5.3 The A/E Consultant shall provide for the proper commissioning of the energy conservation measures whether or not a formal commissioning program is to be implemented.

APPENDIX X

Indoor Air Quality Guidelines

1.0 General

The following guidelines are intended to outline processes and methods to minimize adverse Indoor Air Quality (IAQ) conditions on the occupants of buildings designed and constructed under the direction of the Division of Engineering and Architectural Services. Applicability of these guidelines for specific projects will be determined by the Project Manager and the Client Agency and will be incorporated into the A/E Agreement. For those projects these guidelines shall be met by both the Architect/Engineer (A/E) consultant and the contractor to assure acceptable IAQ conditions are provided to the initial occupants of the building and over the life of the building. Compliance with this guideline is considered to be a basic service.

2.0 IAQ Considerations

The A/E shall incorporate the following IAQ considerations into the design and construction documents:

2.1 Maintain strict pollutant source control by specifying materials and substances which are designed, manufactured, handled and installed in such a manner that they will produce the least harmful or annoying effect on the occupants of the building.

2.2 Provide an adequate outdoor air supply to the building which is protected from exterior pollutant sources, including the building's own exhaust and venting systems, parking areas, loading docks and smoking areas.

2.3 Provide floor coverings appropriate for areas of use based on potential exposure to water, foot traffic, food spills and other contaminants.

2.4 Provide adequate and effective fresh air delivery to occupants and including special purpose areas.

2.5 Provide properly designed exhaust systems to remove pollutants generated within the building before they are redistributed through the occupied space. The exhaust systems shall be designed for compatibility not only with the building's air intake system(s), but also for compatibility with adjacent buildings and with future development in accordance with the site master plan.

2.6 Provide building design which will protect building occupants from infiltration, both natural and stack effect, of carbon monoxide, particulates and other pollutants from external sources, and radon from ground sources.

2.7 The design of the internal Heating, Ventilating, and Air Conditioning (HVAC) delivery systems shall incorporate the ability to redirect, without great expense, the internal air flows as occupancy and activity patterns change over the life of the building.

2.8 Provide documentation describing:

2.81 The amount and type of chemical vapors or particles which may be emitted from materials introduced into the workspace; and

2.82 The building design with the mechanical HVAC systems design including zoning.

2.9 Provide training to the building maintenance and operations personnel to ensure a thorough understanding of the IAQ goals, their role in meeting the goals, and how the HVAC systems should be operated to meet the goals.

3.0 Indoor Pollutant Source Control Plan

The A/E shall develop and implement an Indoor Pollutant Source Control Plan indicating how the Emission Rate Standards that follow will be implemented. The Plan shall apply to all interior construction materials, finishes and furnishings including partitions, wall coverings, flooring,

floor coverings, ceiling tiles, adhesives, paints, sealants, glazes, insulation, duct work, wiring and other materials which may have chemical content.

3.1 Design documents shall require that all appropriate suppliers be made aware of the IAQ goals and the requirements to comply with the Emission Rate Standards.

3.2 Where possible, materials used shall emit the lowest, yet technologically achievable, emissions of chemical vapors and particles.

3.3 Emission Rate Standards:

3.31 **Formaldehyde Emission Rate Standard:** The product emission rate shall not result in an indoor air concentration level of formaldehyde greater than 0.05 parts per million.

3.32 **Total Volatile Organic Compound (VOC) Emission Rate Standard:** The product emission rate shall not result in an indoor air concentration level greater than 0.5 mg/m^3 of total volatile organic compounds.

3.33 **4 Phenyl Cyclohexene (4-PC) Emission Rate Standard:** The carpet emission rate shall not result in an indoor air concentration level greater than 1 part per billion.

3.34 **Total Particulates Emission Rate Standard:** The product emission rate shall not result in an indoor air concentration of greater then 50 ug/m^3 total particulates.

3.35 **Regulated Pollutant Standard:** Any pollutant regulated as a primary or secondary air pollutant shall meet an emission rate standard that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard (USEPA, Code of Federal Regulations, Title 40, Part 50).

3.36 **Other Pollutant Standard:** Any pollutant not specifically mentioned in subparagraphs 3.3.1 through 3.3.4 shall meet an emission rate standard that will not produce an air concentration level greater than 1/10 the Threshold Limit Value - Time Weighted Average (TLV-TWA) industrial workplace standard.

3.4 As part of the Shop Drawing process, the A/E shall include a requirement that the contractor provide compliance information and Material Safety Data Sheets (MSDS) on all indoor construction material. Additionally, that the contractors disclose, in writing and prior to installation, information on those VOCs found to be emitted by the products and known to be carcinogens, mutagens, reproductive toxins, or compounds that emit greater than 1/10 the TLV-TWA.

3.5 All emission rate testing pertinent to air quality shall be done in accordance with ASTM D5116-90, Small Scale Environmental Determination of Organic Emissions from Indoor Materials/Products. All test data shall be made available to the State at its request.

3.6 The least amount feasible of "wet" materials (such as adhesives, sealants, glazes, caulks, paints, etc.) shall be used during construction and product applications. The Plan shall include control strategies for achieving this minimal use requirement.

3.7 "Dry" furnishing materials (such as carpet, acoustical panels, textiles, etc.) shall not be installed until "wet" materials have been applied and allowed to dry to the extent feasible and in accordance with other good building practices. Drying times should be chosen so that pollutant emission rates as set forth above are achieved prior to installation of the "dry" furnishings.

3.71 All dry furnishing and materials (such as carpet, floor tile, acoustical tile, textiles, office furniture, wood shelving, etc.) shall be allowed to "air-out" in clean environments prior to installation in a building.

3.72 All indoor construction material shall be protected from contamination by construction dust, debris, and fumes during all phases of construction, both before and after installation.

4.0 Ventilation Control Plan

The A/E shall develop a Ventilation Control Plan which includes an analysis of the adequacy and effectiveness of the proposed mechanical HVAC

system covering the following factors:

4.1 Location of building outdoor air intakes to ensure an acceptable quality of outdoor air.

4.2 Location of building exhausts, plumbing vents and other pollutant sources to prevent reentrainment of exhausted or polluted air back into the building.

4.3 Integration of building air intake and exhaust locations with the overall site master plan to optimize the quality of outdoor air intake for all buildings on adjacent sites.

4.4 The ability of the building exhaust system to ensure external exhaust of pollutants and odors created in laboratories, building support areas, cafeteria, break rooms, printing areas and other special purpose areas; and treatment of those exhausts, if appropriate, to eliminate particles and toxic pollutants from the air before exhausting it.

4.5 The ability of the HVAC system to provide: 1) an adequate ventilation rate of outdoor air to the ultimate expected building population and usage, and 2) adequate make-up air, as appropriate, for special purpose areas.

4.6 The ability to achieve acceptable ventilation effectiveness in the occupied zones.

4.7 The ability to effectively integrate the air delivery system with the occupied space activities and space design.

4.8 The ability of the building to provide protection of its occupants against infiltration, both natural and stack effect, of the following:

4.81 Carbon monoxide, particles and other pollutants from the parking areas, loading dock areas, smoking areas, and other pollutant sources external to the building.

4.82 Radon from ground sources.

5.0 Additional Environmental Controls

5.1 To prevent and/or inhibit the degradation of IAQ in adjacent occupied buildings during construction, the following shall be observed:

5.11 Minimize the amount of construction dust, vapors and fumes generated at the construction site;

5.12 Provide temporary source of outdoor air, if required, to prevent construction dust and fumes from infiltrating into the adjacent building's mechanical system; and,

5.13 Recondition the air systems of adjacent buildings, affected by the construction project, to at least the pre-construction cleanliness conditions.

5.2 To prevent and/or inhibit the degradation of indoor air quality in occupied portions of buildings during renovation projects, the following shall be observed:

5.21 If possible, schedule renovation projects to occur during favorable weather seasons and/or conditions;

5.22 Separate and section off the area where renovation is to be performed from the remaining space or perform work during non-operating hours. Space shall be thoroughly cleaned and flushed with outdoor air prior to occupancy; and,

5.23 Prevent construction dust and fumes from infiltrating into the building's mechanical system.

6.0 Indoor Air Quality Operations Plan

The A/E shall provide a building indoor air quality operations plan which includes, but is not limited to, the following:

6.1 HVAC design and operating documentation as recommended by the equipment manufacturers and the design engineer;

6.11 Information on the daily operation and management of the building systems, a description of normal operating procedures, special procedures such as seasonal start-ups and shutdowns, and a list of operating performance criteria including, but not limited to minimum outside air ventilation rates, special

space relative humidity and pressurization requirements;

6.12 A general description of the building and its function including but not limited to, work activity, number of employees and visitors, hours of operation, weekend use, and potential air contaminants which could be released into the space.

6.2 The scope of work for the initial balancing of the HVAC system at the occupied zone before Substantial Completion and before final Acceptance;

6.3 A recommended program for re-balancing of the HVAC system at seasonal changes;

6.4 A recommended building flush out period of high ventilation at ambient temperatures (100% outside air) which shall take place after completion of all interior construction and prior to placing any furniture in the ventilated space, and another flush out period after all furniture has been unpacked and placed in the ventilated space, all of which shall be scheduled and occur prior to Substantial Completion (Balancing and Commissioning may take place during this flush out period);

6.5 The requirements for an extended ventilation flush period after Substantial Completion and occupancy at the normal ventilation rate (Include length of time for 24 hour per day operation and length of time and duration for early start up of HVAC systems); and,

6.6 The scope and content of a training program for the State's maintenance staff to properly operate and maintain the HVAC systems under all operating conditions to meet IAQ goals and ventilation standards.

APPENDIX XI

Value Engineering Guidelines

1.0 General

It is the policy of the State of Washington that major facility designs be based on achieving the best value over the life of the project. The value can be achieved in the initial construction cost, building efficiency, long term operating cost, maintenance costs, or personnel costs necessitated by a particular design.

A Value Engineering (VE) study is performed for every major capital project (Major capital projects are projects costing $5 million or more). A separate VE firm will be contracted with to perform the value engineering study.

The "Report Of Results Of Value Analysis" shall be completed and submitted to the PM.

2.0 Participants and Responsibilities

The responsibilities outlined herein constitute the minimum effort required to comply with the VE process. They are not intended to be a complete listing of the responsibilities of each participant.

2.1 The PM will develop a scope of work for the VE team, chair the selection committee and contract for the VE services.

2.2 The A/E shall present the project to the VE team. At a minimum the A/E shall describe the program, functional requirements, alternatives considered, reasons current design decisions have been made, and description of how the project will evolve.

2.3 The VE team shall review the Energy Life Cycle Cost Analysis (ELCCA) report presented by the ELCCA analyst and include the recommendations of that report in the VE report. The VE team may recommend additional alternatives to be analyzed prior to final acceptance of the ELCCA report.

2.4 The A/E shall review the VE team's findings and recommendations, assist the VE team in explaining the findings and recommendations to the building Owner, and assist the Owner in deciding which recommendations to accept.

2.5 The A/E shall be responsible for incorporating the approved recommendations into the contract documents.

3.0 A/E Involvement

The time spent by the A/E in preparing the VE team to conduct the study and the time required to incorporate the VE suggestions, accepted by the agency, into the previously approved documents are considered an extra service.

APPENDIX XII

Constructability Review Guidelines

1.0 General

It is the policy of the State of Washington that major facility designs be based on achieving the best value over the life of the project. The value can be achieved in the initial construction cost, building efficiency, long term operating cost, maintenance costs, or personnel costs necessitated by a particular design.

A Constructability Review (CR) study is performed for every major capital project (Major capital projects are projects costing $5 million or more). A separate CR firm will be contracted with to perform the Constructability Review study.

2.0 Participants and Responsibilities

The responsibilities outlined herein constitute the minimum effort required to comply with the CR process. They are not intended to be a complete listing of the responsibilities of each participant.

2.1 The PM will develop a scope of work for the CR team, chair the selection committee and contract for the CR services.

2.2 The A/E shall present the project to the CR team. At a minimum the A/E shall describe the program, functional requirements, alternatives considered, reasons current design decisions have been made, and description of how the project will evolve.

2.3 The CR team shall review the Energy Life Cycle Cost Analysis (ELCCA) report presented by the ELCCA analyst and include the recommendations of that report in the CR report. The CR team may recommend additional alternatives to be analyzed prior to final acceptance of the ELCCA report.

2.4 The A/E shall review the CR team's findings and recommendations, assist the CR team in explaining the findings and recommendations to the building Owner, and assist the Owner in deciding which recommendations to accept.

2.5 The A/E shall be responsible for incorporating the approved recommendations into the contract documents.

3.0 A/E Involvement

The time spent by the A/E in preparing the CR team to conduct the study and the time required to incorporate the CR suggestions, accepted by the agency, into the previously approved documents are considered an additional service.

Approved by: John Lynch, A.D.	Related Policies	Date: July 2, 1998 Revised: February 28, 2000

POL 7.20 -- Computer Aided Design (CAD) Project Drawings

The purpose of this policy is to ensure that computer aided design (CAD) record drawings are provided for all projects and delivered in a form that provides a useable electronic record of the project.

CAD drawings must meet the guidelines published by the Division of Engineering and Architectural Services, Department of General Administration. Project Managers, client agency facility staff and consultants cannot be expected to convert or use CAD drawings that do not meet these guidelines.

1. **All record drawings for public works construction shall be created using a computer aided design (CAD) program.**

   This does not waive the requirement for providing reproducible, ink on mylar record drawings.

   Exceptions may be granted by Project Managers for projects with a MACC less than $1,000,000.

   Deputy Assistant Directors may waive this requirement when CAD record drawings are impractical or inappropriate.

   This requirement may be waived by the Project Manager for portions of a drawing set such as standard details, manufactures' catalog sheets, shop drawings and other drawings not typically produced by CAD. Plan views of drawing sets will always be required in CAD.

2. **AutoCAD record drawing files that are provided by E&AS for use on a project must be field verified in critical areas for dimensional accuracy and completeness.**

   Record drawings may not represent an accurate as-built condition. They should be treated as any other document from a past project and be field verified.

3. **Drawings will utilize AIA CAD Layer Guidelines.**

   Use the standards provided in AIA CAD Layer Guidelines; Recommended Designations for Architecture, Engineering, and Facility Management Computer Aided Design published by The American Institute of Architects Press. See PRO 7.20.02 for further details.

4. **Drawings will meet all technical requirements contained in PRO 7.20.02.**

PRO 7.20.2 -- Computer Aided Design (CAD) Guidelines

The purpose of this policy is to ensure that computer aided design (CAD) record drawings submitted by A/E firms meet the division's technical guidelines.

1. **Drawings will utilize AIA CAD Layer Guidelines.**

   Use the standards provided in AIA CAD Layer Guidelines; Recommended Designations for Architecture, Engineering, and Facility Management Computer Aided Design published by The American Institute of Architects Press.

   The Project Manager may approve alternate layer standards in cases where a consultant's CAD system cannot reasonably be adapted to the AIA guidelines or in cases where the client agency's facility management system requires an alternate standard. In these cases, a layer conversion table showing comparable AIA layers shall be provided as part of the project "readme.txt" documentation on the delivery disks.

2. **Drawings will be in MS Windows compatible, AutoCAD DWG format, release 12, or later.**

   Many CAD systems use UNIX or Apple based operating systems. When drawings from these systems are delivered, they shall be converted at the source to MS Windows file format.

   Engineering and Architectural Services uses AutoCAD DWG format for review, editing and archiving drawings. DXF format is not acceptable.

3. **Drawings will be in uncompressed or in "zip" compression format.**

   The industry-wide standard for compression is the "ZIP" format. Delivery of UNcompressed files is preferable whenever possible.

4. **Drawings will be on a CD-ROM or 3-1/2" high density diskette.**

   Use PC compatible, CD-Rom disks to deliver drawings. If drawings can be delivered on **less than 3** disks, then the project may be delivered on 3 1/2" high density floppy disks.

5. **Drawing files will be purged of all unused layers, blocks, line types and font styles.**

   Extraneous layers create confusion when record drawings are used for facility management. Unused blocks, line types and font styles add unwanted size to drawing files.

6. **Script files will be provided for layer control if drawings are stacked.**

   Provide AutoCAD script file(s) when a drawing file is stacked (i.e. the file contains layers that must be turned on or off to provide views of more than one "drawing sheet".) Describe the appropriate

script file(s) in the "Readme.txt" file so that reviewers will know which script to use to obtain the desired view.

7. Fonts, specialty menus and XREFS will be provided on delivery disks.

All fonts, specialty menus and XREF files that are used in the drawing files must be included with the delivery disk(s). If possible, use only standard AutoCAD fonts and menus. When the delivery disk(s) are created, they shall be tested for completeness at the source.

8. Font, menu and XREF addresses will be relative to delivery disk.

On the delivery disk(s), the directory that contains the project files shall also contain the related fonts, menus and XREF files. The drawing references to these files shall be relative to this same directory, not to an “absolute” directory on the original system.

9. Colors will be “by layer”, not by entity.

Entity colors shall be “By Layer”, not by entity. Since plotted line weights are tied to color, this will allow easy adjustment of plotted line weights.

10. Colors will coordinate with plotter pen weight standards.

Layer colors shall be selected to plot with appropriate line weights. A pen table showing layer color vs. pen weight shall be included in the "Readme.txt" file. The color vs. pen weight standards used by Engineering and Architectural Services are the following:

Color	Pen	Line Weight
Red	1	.003
Yellow	2	.007
Green	3	.010
Cyan	4	.013
Blue	5	.017
Magenta	6	.020
White (black)	7	.023
Gray	8	.027
Color # 9	9	.033
Color # 10	10	.037
Color # 11	11	.040
Color # 12	12	.043
Color # 13	13	.047
Color # 14	14	.050

Pen colors from 150 to 200 represent gray scales:

Color # 150	150	.010	10% gray tone
Color # 160	160	.010	30% gray tone
Color # 170	170	.010	50% gray tone

Color # 180	180	.010	70% gray tone
Color # 190	190	.010	90% gray tone

11. All CAD drawing files shall be created at "ONE-TO-ONE" scale (in "World Coordinates").

When details are plotted on the same "drawing sheet" with a base plan at a different scale, use AutoCAD's Paper Space or create the details as separate drawing files and insert them on the "drawing sheet" as XREF files with appropriate scale factors. In the latter case, the separate XREF drawing files shall be created at one-to one-scale.

12. "Object snap" will be used to ensure drawings are accurate.

Lines and entities that are designed to meet or intersect shall be "snapped" to ensure accurate connections and relationships. Future use of a CAD drawing is compromised when lines/entities that appear to meet…and were designed to meet…are off by a small, unpredictable amount. Small errors caused by failure to "snap" objects significantly complicate dimension checks and alignments.

13. Dimensions will be made associative.

Make dimensions associative: i.e., the dimensions shown on the drawing shall relate directly and electronically to the actual dimension of the CAD coordinates of the dimensioned entity. For example: if a CAD line actually measures 20' 1-5/8" but is dimensioned as 20' 1-1/2", the CAD dimension is NOT associative. The 1/8" difference between "actual" and "dimensioned" can confuse dimension checks and complicate use of the file in future applications.

14. Ensure two-dimensional entities lie in proper elevation planes.

When mixing 3D and 2D drafting in one drawing file, ensure that lines/entities that are designed to be in the same plane actually do lie in the same plane. With CAD, it is too easy to "snap" to entities in the wrong elevation plane. When viewed from a 3D viewpoint, lines that appear to be correct in plan view may actually connect points on two different elevations. This is especially true when a CAD drawing contains "stacked" floor plans, each drawn at a different elevation.

15. Site plans, building plans and the plans for specific disciplines shall all have the same origin.

The insertion base in AutoCAD shall be at coordinates 0,0,0. Plan view drawing origins shall be chosen such that drawings for each discipline or building system can be overlaid exactly with the base plan drawing.

16. Ensure text and blocks are not "exploded" during conversion.

Some CAD systems convert to DWG format by "exploding" text and blocks into lines and arcs. Ensure that text in the delivered file reads as a text entity in AutoCAD. Also ensure that entities that are supposed to be blocks (blocks are entities that are grouped into one unit) remain as blocks during the conversion process. Poor conversion could remove all of the "intelligence" of the original drawing file.

17. Coordinate equipment and component naming with facility staff.

Naming of components and equipment, especially the use of abbreviations, shall be coordinated with the facility staff. Use of standardized equipment and component data sheets is encouraged. Final coordination of CAD record drawings with Operations and Maintenance manuals and with the facility maintenance system is required.

18. The project shall be documented with a "README.TXT" file included on the delivery disks.

A "Readme.txt" file that contains important information about the project and the associated computer files shall be included with the drawing and project files on the delivery disk(s). This text file shall contain all of the information that a future E&AS or facilities staff member will need to view, read, analyze, plot or print the project files.

At a minimum, the "Readme.txt" file should contain the following:

Project information:

- Project number, title, and brief description
- Client agency, facility, and building
- Consultant and subconsultant contact person(s), E&AS Project Manager, and client agency contact person
- Contractor and subcontractor contact person(s)
- Detailed description of project

Files listing:

- Compressed files (PKZIP). Include a list of all file names compressed within a single ZIP file.
- Drawing files, including brief description of each. When used, include a list of associated X-Ref drawing files, special font or menu files, and "script" files used for layering control.
- Script files, including a description and where and when they are to be used.
- X-Ref drawing files, including brief description and those drawings with which they are associated.
- Font shape files, for non-standard fonts including a brief description of the character type of the font.
- Specifications files, if included. Include description of word processor version used.
- SourceView bid pack files, if included. Include brief description of each associated file.
- SourceView reader. Include the self installing (free) reader on the disk(s) if needed.
- WEB index (HTML), if included. Include listing of connected web sites and manufacturers' web pages.
- WEB files (HTML), if included. Include brief description of each file or O&M manual.
- O&M manual files, if included. Include brief description of file and a description of word processor version or file reader required (if not in HTML.)
- File reader software (free), if required to read O&M manuals. Include installation instructions.

Pen Weight Table:

- Pen table showing layer color vs. pen weight (if it differs from the E&AS standard).

Layer naming schedule:

- Layer names, including brief description of each (not required if using AIA Layer Guidelines.)
- Script files used to control display of layers in composite or stacked drawings, including description of what each script is designed to display.
- Conversion table relating drawing layers to the AIA equivalent (if layering is not by AIA Layer Guidelines). If the facility requires special layering definitions, then the conversion table must define each layer used in the drawings and how it relates to the facility's definition.

Block naming schedule:

- Block names related to specific facility equipment as requested by facility staff. Include matching of block names to Client Agency's facility management software, it required.
- Layers used within blocks, if not on layer zero (0).

Coordinate schedule:

- Geographic coordinates for the insertion point, origin (0,0,0), for each drawing file, if relevant. Include description of the geographic coordinate system used (i.e. State Plane, Latitude and Longitude, local reference…)

19. Disks will be tested at the source prior to distribution.

After the delivery disks are created, they shall be tested at the source prior to distribution. Only those who have created the drawing files know how to fix any problems. The disks should be downloaded to a test directory on a Windows PC-compatible computer running AutoCAD release 12, or later, software. Each drawing file should be opened and reviewed. All applicable script files should be run.